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ABSTRACT

A project was conducted to teach behavior modification techniques in a number of school settings and to get teachers to apply the techniques in their classrooms. Techniques, which consisted of making some consequence (reward) contingent upon appropriate behavior emitted by the individual or group, were demonstrated at teachers' meetings in a predominantly white elementary school, a predominantly Negro junior high, a special education center, a parent group, and a guidance counselor group. Teachers who volunteered to participate (24 percent of a possible 111) recorded data on 367 students and met weekly with consultants for instruction, discussion, and plotting of behavior graphs. Seventy-seven behaviors were observed and counted with 50 attempted modifications of individual behavior, 20 of group behavior. Data was to have covered three basic observation phases: premodification--for baseline data; modification--introduction of the contingency; and postmodification--withdrawal of contingency. However, 37 premodification phases were not followed by modification; 26 behaviors were graphed through modification and 19 were completed through the final phase. Results indicate that modification techniques can be applied by teachers, parents, and guidance personnel to produce significant changes in behavior of children from all walks of life. (Included are descriptions of difficulties encountered by investigators, 45 behavior graphs with discussion of data, and the poststudy questionnaire with results.) (JS)

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FINAL REPORT

to The Florida State NDEA Steering Committee:
An Evaluation of the Operant Method of
Teaching Disruptive and Non-learning
Students in the Classroom

NDEA Special Project No. 05-68-89-03

submitted by

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MAY 1, 1969

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INTRODUCTION

In May, 1968, the project entitled "An Evaluation of the Operant Method of Teaching Disruptive and Nonlearning Students in the Classroom" was initiated. The general purpose was to teach behavior modification techniques to teachers in a number of school settings and get them to apply the techniques in their classrooms. In a broad sense the modification techniques consisted of making some consequence (reward) contingent upon appropriate behavior emitted by the individuals or groups.

The objectives for the project were as follows:

1. To demonstrate the techniques in a number of school settings.
2. To collect data on the effect of the remedial techniques on a sizeable sample of students.
3. To evaluate the extent and the duration of the remedial effect on both individual students and groups of students over both short and longer periods of time.
4. To disseminate information about the project through preparing and making readily available to interested parties, broadcast quality video tapes and 16mm sound kinescopes about the techniques, procedures, and results of the project.
5. To enhance communication between Florida Atlantic University and nearby public school systems.

6. To determine if classroom teachers involved in the project both accept the techniques and utilize them as a part of their daily teaching activities.

The report which follows describes the rationale, the settings, the subjects, the target behaviors, the modification procedures, the results and the discussion of the project.

METHOD

Description of Schools

The setting for the research was three schools, one predominantly white elementary school, one predominantly Negro junior high school and one special education center which serves children of all races with disabilities of the nature of emotionally disturbed, learning disabilities, hearing disabilities, and mildly mentally retarded. Several teachers from two other schools, after obtaining information about the project, also became involved in the research. The three major school settings included approximately 2,054 students and 111 teachers.

Procedures

Teachers: Initial contact with teachers at the participating schools was through their principal or a faculty meeting. At faculty meetings a short general description of behavior modification techniques was given. Brief mimeographed sheets describing modifications of sample behaviors were distributed. Each teacher at such meetings was asked to fill out a short non-standardized questionnaire concerning opinions about changing students' classroom behavior. One item served to indicate to the experimenters which teachers were interested in attempting behavior modifications in their class. The teachers who indicated interest were later contacted individually for further discussion of the program.

Each of the participating schools provided the experimenters with either a small room or a place in the faculty lounge for the

weekly consultations with teachers. The first individual meeting with a teacher included setting up a convenient time for the weekly consultation, discussion of the basic objectives of behavior modification techniques and definition of the teacher's specific problems with the class. The consultants supplied teachers with special data sheets each week.

Discussion of a proposed modification included exact definition of the general behavior and listing of those discrete responses which the teacher would count. Modifications were attempted with both individuals and groups. Group behaviors of the given description were counted together for the group total. After recording the data for one week, teachers brought their data sheets to the weekly meeting and it was plotted for them by the consultants. The dependent variable was either rate, frequency or mean number of responses. If a teacher was collecting data utilizing rate of response as the dependent measure, he was loaned a Dom Wrist Counter and sometimes an S.P. Timer such as those used by Lindsley (1968). The counter allowed the teacher to continue his regular teaching duties while counting--by wearing the apparatus like a wrist watch. The timer was used to indicate the end of the period of minutes during which the teacher recorded the frequency of occurrence of the behavior and derived the rate of the behavior. Rate of response is defined as the number of times a behavior occurred divided by the number of minutes of observation. The importance of gathering

good pre-modification (or baseline) observation data was emphasized. Teachers were requested to continue their normal teaching routine during the pre-modification phase with the exception of recording the frequency of the behavior to be modified. At the weekly meetings with the consultants, teachers presented and discussed their data. All data was plotted on graphs and a copy of the data sheet and the graph was given to each teacher. A week by week account of the progress of the modification was kept in separate file folders for each teacher.

When the experimenters judged the baseline to be somewhat stabilized, the teacher was asked to begin the modification phase. The search for an appropriate contingency began by asking the teacher, "What have you noticed that this child likes?" On an individual basis, rewards were given for a specified decrease in inappropriate responses, or increase in appropriate responses. Group contingencies required that the whole class rate or frequency be changed in the desired direction in order for them to receive the reward. A punishment schedule was employed by only one teacher. Some of the material rewards used by teachers were tokens, candy, cookies, scrapbooks, and toys. Social rewards, privileges and praise were also used both by themselves and in conjunction with material rewards to reinforce positive behavior.

As the data were collected during the modification phase, the efficacy of the contingency was evaluated. If after two or three

weeks no change in the desired direction occurred, reconsideration of the contingency was made. The rewards or the contingency often had to be adjusted. When modifications were found to be working well, they were continued until some stability was apparent from the graph. A post-modification phase was then initiated. Counting of behaviors in question continued as in the baseline, and rewards were discontinued or made non-contingent upon the target behavior. After the post-modification condition, the reward contingency was reintroduced. Teachers continued to collect data and some began work on a different student behavior when the first one was modified to the teacher's satisfaction. Prior to the termination of the project another non-standardized questionnaire was administered. This questionnaire was an attempt to ascertain the extent to which teachers accepted and utilized behavior modification techniques.

Parents: The reason for including a parents' group in this project relates to research previously conducted with a group of culturally deprived parents in the 1967-1968 school year. The parents' group which was initiated as part of the present research project was begun at an elementary school which was one of the target schools. At one time or another, a total of twelve different mothers were involved in the parents' group. The population of mothers consisted of both housewives and working mothers. As a group, the mothers were considered to be in the middle income group.

Initially, the parents were contacted by the reading teacher

at the school. The parents met with the consultants every Thursday afternoon for an hour. In the beginning sessions, basic information concerning observing behavior, defining behavior, and collecting data was discussed. Some examples of behavior modification were given. Parents were asked to observe either themselves or their children for a possible behavior modification. Next, the parents counted either the frequency or rate of occurrence of the behavior in question. The data for this period of time was considered the pre-modification phase. Various contingencies in terms of rewards and punishments were discussed with the parent group. If the contingency applied during the modification phase did not lead to the desired change in the frequency or rate of behavior, another contingency was applied.

The three phases of each behavior modification were identical to those utilized with the teachers; that is, pre-modification, modification and post-modification.

The consultants plotted the data for the parents initially, but later the parents plotted their own data during each meeting. Many of the parents also wrote remarks on the data sheet when some incident occurred in the home which seemed to be important to them in terms of the contingency.

Elementary Guidance Workers: The general procedure used in this pilot project was to consult weekly with three elementary guidance counselors for four months and observe their "natural" use of

baseline data. The counselors were to observe and chart data only at the request of teachers. The students observed were described by their teachers as disruptive to a point at which their behavior was interfering with the education of the other members of the class. Once a week the consultant met with the elementary guidance counselor. The purpose of the weekly meetings was to discuss the collected data, plan strategy, and assess the nature and magnitude of any problems the elementary counselor might be experiencing.

A data sheet, originated by one of the elementary guidance counselors, was used to record the frequency of the behavior to be modified. The counselor observed and recorded the behavior daily in the requesting teacher's classroom. Some of the more frequently observed disruptive behaviors were: shouting out, stomping feet, hitting or pushing, defiance, whistling, idle conversation, playing with toys, and being out of seat. In plotting the data, the dependent measure was rate and the independent measure was days.

All information emitted by the elementary guidance counselors during the consultative visits had to be data oriented. That is, all comments about students, teachers, and target behaviors had to be related to the charted data.

RESULTS

Table 1 indicates the means of all completed phases of each modification.

Graph A-1. This graph indicates the results of a modification of disruptive behavior in a seven year old boy. Disruptive behavior was defined as: (1) rocking in chair, (2) scraping chair on floor, (3) lying on desk, (4) kicking feet, (5) banging on chair with pencil, (6) sucking thumb, (7) pulling hair, (8) shooting paper wads, (9) talking and marking on other student papers, and (10) imitating animal noises. The counselor observed the boy for ten minutes per day and recorded the number of seconds he emitted disruptive behavior. This quantity was then expressed as a percentage of the ten minute period and graphed on the basis of percent of ten-minute periods spent in nondisruptive behavior.

The pre-modification period (I) was in effect for fifteen sessions and indicated extreme variability. In only four sessions was the percent of time spent in nondisruptive behavior higher than 40%. In ten sessions the child was engaging in disruptive behavior more than 80% of the ten minutes.

The first modification (II_1) consisted of allowing the boy to read to the guidance counselor if the graph was 40% or above. During the next twelve sessions, the child's percentage of nondisruptive behavior dropped below 40% only twice.

During the second modification, (II_2) which continued for four sessions, the boy was required to maintain nondisruptive

TABLE 1

Means for Completed Phases for All Modifications

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-1 % of duration (10m) spent in nondisruptive behavior	(448÷16 sessions) $\bar{x}$ = 28%	(793÷12) $\bar{x}$ = 66.1%	(362÷4) $\bar{x}$ = 90.5%	(310÷6) $\bar{x}$ = 51.7%	(713÷8) $\bar{x}$ = 89.1%	(669÷7) $\bar{x}$ = 95.6%		
A-2 number of times child must be asked to calm down	(146÷13) $\bar{x}$ = 11.2	(128÷74) $\bar{x}$ = 1.7						
A-3 frequency of disruptive behavior	(80÷20) $\bar{x}$ = 4.0	(34÷8) $\bar{x}$ = 4.2	(3÷8) $\bar{x}$ = .4	(12÷9) $\bar{x}$ = 1.3	(4÷15) $\bar{x}$ = .3			
A-4 rate of talking when not supposed to	Individual: (15.0÷12) $\bar{x}$ = 1.2 Group: (30.2-14) $\bar{x}$ = 2.2	Individual: (3.8÷2) $\bar{x}$ = 1.9 Group: (7.4-2) $\bar{x}$ = 3.7	Individual: (.6÷23) $\bar{x}$ = 0 Group: (8.2-23) $\bar{x}$ = .4	Individual: (.6÷10) $\bar{x}$ = .1 Group: (1.2-10) $\bar{x}$ = .1	* *		Individual: (10.8÷11) $\bar{x}$ = 1.0 Group: (21.4-11) $\bar{x}$ = 1.9	
A-5 number of times child takes everything out of desk	(33÷17) $\bar{x}$ = 1.9	(9÷28) $\bar{x}$ = .3					(0÷28) $\bar{x}$ = 0	
A-6 % of week (5 days) child remembers to wear glasses	(0÷2) $\bar{x}$ = 0%	(280÷3) $\bar{x}$ = 93.3%					(620÷7) $\bar{x}$ = 88.6%	

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-7 mean number of rules broken by group	(45.1÷9) $\bar{x}$ = 5.0%	(84.6÷46) $\bar{x}$ = 1.8%					(11.7÷10) $\bar{x}$ = 1.2%	
A-8 mean number of rules broken by group	(34.8÷25) $\bar{x}$ = 1.4	(24.4÷18) $\bar{x}$ = 1.4						
A-9 modification of disruptive behavior in 7 yr. old boy by teacher	(213÷17) $\bar{x}$ = 12.5	(107÷17) $\bar{x}$ = 6.3						
A-10 rate of talking and laughing	(11.1÷24) $\bar{x}$ = .5							
A-11 mean number of tokens given group		(I mod.) (308÷36) $\bar{x}$ = 8.6	(III mod.) (128.3÷16) $\bar{x}$ = 8.0				(II post-mod) (76.7÷11) $\bar{x}$ = 7.0	
A-12 mean number of tokens given group		(I mod.) (299.2÷39) $\bar{x}$ = 7.7	(III mod.) (127.4÷16) $\bar{x}$ = 8.0				(II post) (73÷11) $\bar{x}$ = 6.6	

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-13 mean number of tokens given group		(I mod) (169.1÷22) $\bar{x}$ = 7.7						
A-14 number of bad attitude responses	Individual: (24÷19) x = 1.3 Group: (13-19) x = .7	Individual: (21÷10) x = 2.1 Group: (14-10) x = 1.4	Individual: (14÷9) x=1.6 Group: (18-9) x = 2.0					
A-15 number of times child is day-dreaming or staring	(21÷9) $\bar{x}$ = 2.3	(6÷2) $\bar{x}$ = 3.0	(6÷4) $\bar{x}$ = 1.5					
A-16 % of week child is (1) tardy (2) forgets pencil & paper	(1) $\bar{x}$ = 80% (2) $\bar{x}$ = 50%	$\bar{x}$ = 35% $\bar{x}$ = 50%						
A-17 rate of disruptive behavior	(290÷7) $\bar{x}$ = .41	(580÷27) $\bar{x}$ = .21	(430÷22) $\bar{x}$ = .20					
A-18 frequency of rules broken-prior to snack time (group)	(54÷15) $\bar{x}$ = 3.6	(24÷9) $\bar{x}$ = 2.7	(0÷5) $\bar{x}$ = 0				(3÷3) $\bar{x}$ = 1.0	(24÷4) $\bar{x}$ = 6.0

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-18 frequency of rules broken prior to snack time (Ronnie)	(15÷11) $\bar{x}$ = 1.4	(13÷7) $\bar{x}$ = 1.8	(2÷5) $\bar{x}$ = .4				(0÷2) $\bar{x}$ = 0	(2÷4) $\bar{x}$ = .5
A-18 frequency of rules broken prior to snack time (David)	(17÷15) $\bar{x}$ = 1.1	(2÷9) $\bar{x}$ = .2	(0÷5) $\bar{x}$ = 0				(0÷3) $\bar{x}$ = 0	(2÷4) $\bar{x}$ = .5
A-19 frequency of rule breaking prior to lunch (group)	(112÷15) $\bar{x}$ = 7.5	(38÷9) $\bar{x}$ = 4.2	(12÷5) $\bar{x}$ = 2.4				(6÷3) $\bar{x}$ = 2.0	(24÷4) $\bar{x}$ = 6.0
A-19 frequency of rule breaking prior to lunch (Ronnie)	(22÷12) $\bar{x}$ = 1.8	(3÷7) $\bar{x}$ = .4	(1÷5) $\bar{x}$ = .2				(1÷2) $\bar{x}$ = .5	(4÷4) $\bar{x}$ = 1.0
A-19 frequency of rule breaking prior to lunch (David)	(24÷15) $\bar{x}$ - 1.6	(5÷9) $\bar{x}$ = .6	(2÷5) $\bar{x}$ = .4				(1÷3) $\bar{x}$ = .3	(4÷4) $\bar{x}$ = 1.0
A-20 frequency of rules broken during lunch prior to phys.ed. (group)	(82÷15) $\bar{x}$ = 5.5	(35÷9) $\bar{x}$ = 3.9	(19÷5) $\bar{x}$ = 3.8				(10÷3) $\bar{x}$ = 3.3	(7÷4) $\bar{x}$ = 1.8
A-20 frequency of rules broken during lunch prior to phys.ed. (Ronnie)	(12÷12) $\bar{x}$ = 1.0	(5÷7) $\bar{x}$ = .7	(6÷5) $\bar{x}$ = 1.2				(0÷2) $\bar{x}$ = 0	(2÷4) $\bar{x}$ = .5
A-20 frequency of rules broken during lunch prior to phys.ed. (David)	(17÷15) $\bar{x}$ = 1.1	(6÷9) $\bar{x}$ = .7	(3÷5) $\bar{x}$ = .6				(0÷3) $\bar{x}$ = 0	(3÷4) $\bar{x}$ = .8

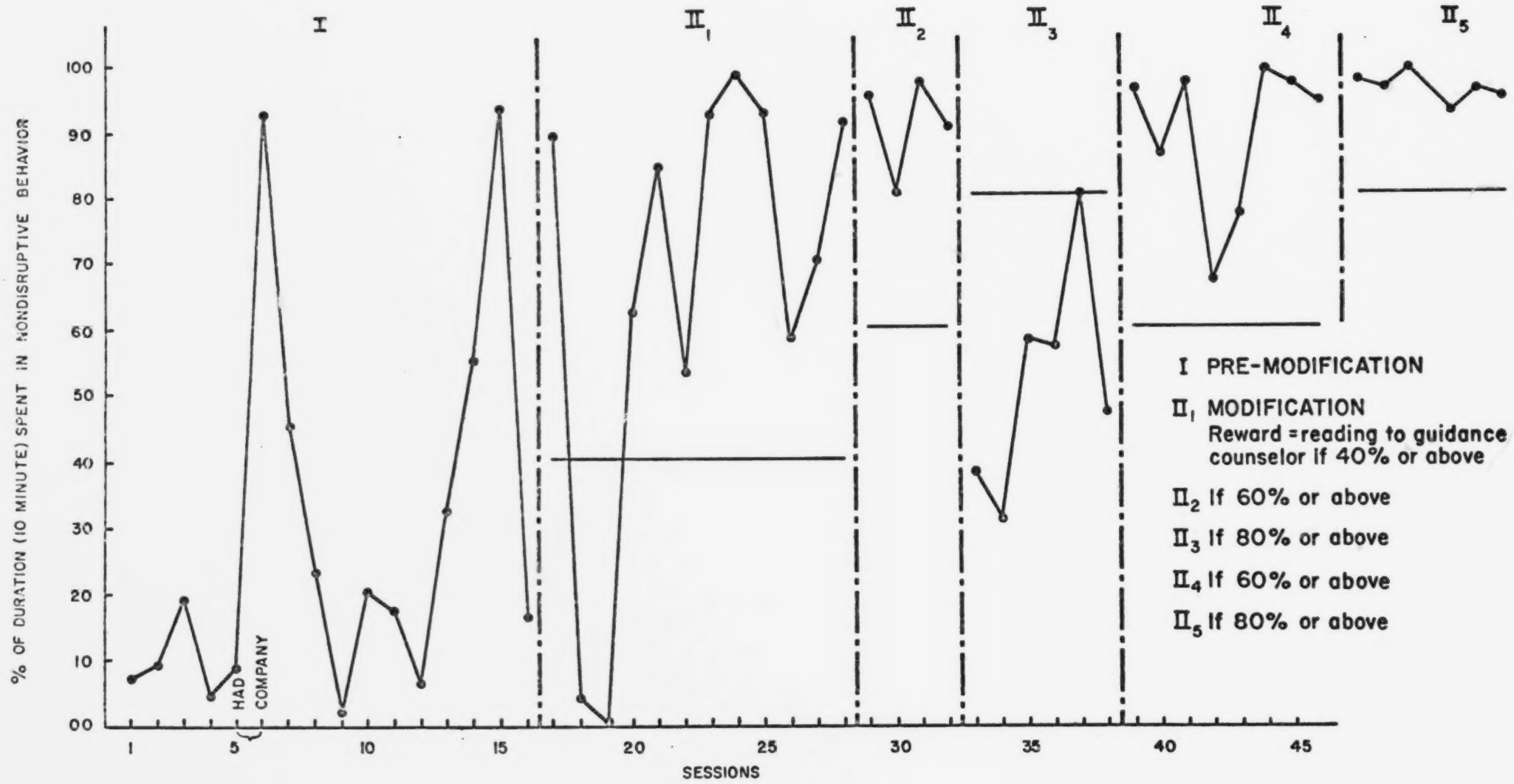
GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-21 frequency of rules broken prior to snack (class)	(101÷26) $\bar{x}$ = 3.9	(102÷17) $\bar{x}$ = 6.0						
A-21 frequency of rules broken prior to snack (Ronnie)	(40÷26) $\bar{x}$ = 1.5	(23÷17) $\bar{x}$ = 1.4						
A-22 frequency of rules broken prior to lunch (class)	(229÷36) $\bar{x}$ = 6.4	(32÷7) $\bar{x}$ = 4.6						
A-22 frequency of rules broken prior to lunch (Ronnie)	(51÷36) $\bar{x}$ = 1.4	(7÷7) $\bar{x}$ = 1.0						
A-23 frequency of rules broken prior to phys.ed. (class)	(44÷36) $\bar{x}$ = 1.2	(5÷7) $\bar{x}$ = .7						
A-23 frequency of rules broken prior to phys.ed. (Ronnie)	(12÷36) $\bar{x}$ = .3	(0÷7) $\bar{x}$ = 0						
A-24 % of week child does not complete homework	(240÷3) $\bar{x}$ = 80%	(260÷5) $\bar{x}$ = 52%	(60÷8) $\bar{x}$ = 7.5%					
A-25 % of week child does not complete homework	(300÷3) $\bar{x}$ = 100%	(460÷6) $\bar{x}$ = 76.7%	(160÷4) $\bar{x}$ = 40%					

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
A-26 number of times child does not follow directions	(188÷53) $\bar{x}$ = 3.5	(60÷30) $\bar{x}$ = 2.0						
A-27 number of times child does not follow directions	(194÷47) $\bar{x}$ = 4.2	(9÷16) $\bar{x}$ = .6	(17÷13) $\bar{x}$ = 1.3					
A-28 number of times child does not follow directions	(180÷37) $\bar{x}$ = 4.9	(59÷44) $\bar{x}$ = 1.3					(3÷5) $\bar{x}$ = .6	
A-29 rate of talking without permission in class	(520÷17) $\bar{x}$ = .31	(310÷12) $\bar{x}$ = .26						
A-30 number of rules broken by group	(80÷24) $\bar{x}$ = 3.3	(71÷17) $\bar{x}$ = 4.2						
B-1 % of times he rides his bike to school	(0÷2) $\bar{x}$ = 0%	(600÷6) $\bar{x}$ = 100%					(1400÷14) $\bar{x}$ = 100%	
B-2 number of bowel movements	appropriate: (2÷30) $\bar{x}$=.1 inapprop.: (18-30) $\bar{x}$ = .6							
B-3 frequency of not eating meals	(46÷13) $\bar{x}$ = 3.5	(5÷4) $\bar{x}$ = 1.2					(7÷4) $\bar{x}$ = 1.8	

GRAPH & BEHAVIOR	I	II_1	II_2	II_3	II_4	II_5	III_1	III_2
B-4 frequency of bedwetting in 4½ yr. female	(200÷2) $\bar{x}$ = 100%	(260÷5) $\bar{x}$ = 52%	(240÷9) $\bar{x}$ = 26.7%	(60÷4) $\bar{x}$ = 15%			(180÷5) $\bar{x}$ = 36%	
B-5 % of week child wets bed	(140÷3) $\bar{x}$ = 46.7%	(360÷8) $\bar{x}$ = 45%						
B-6 nailbiting	(28÷14) $\bar{x}$ = 2.0	(64÷34) $\bar{x}$ = 1.9						
B-7 thumbsucking	(82÷13) $\bar{x}$ = 6.3	(31÷6) $\bar{x}$ = 5.2	(67÷15) $\bar{x}$ = 4.5	(47÷30) $\bar{x}$ = 1.6			(13÷22) $\bar{x}$ = .6	
B-8 thumbsucking	(35÷21) $\bar{x}$ = 1.7	(15÷7) $\bar{x}$ = 2.1						
B-9 whining	(11÷20) $\bar{x}$ = .6	(0÷7) $\bar{x}$ = 0						
B-10 picking up things around house	(8÷17) $\bar{x}$ = .5	(0÷6) $\bar{x}$ = 0						
B-11 cleaning room	(180÷6) $\bar{x}$ = 30%	(80÷2) $\bar{x}$ = 40%	(260÷3) $\bar{x}$ = 86.7%					

GRAPH A-1

MODIFICATION OF DISRUPTIVE BEHAVIOR IN 7 YEAR OLD MALE BY GUIDANCE COUNSELOR



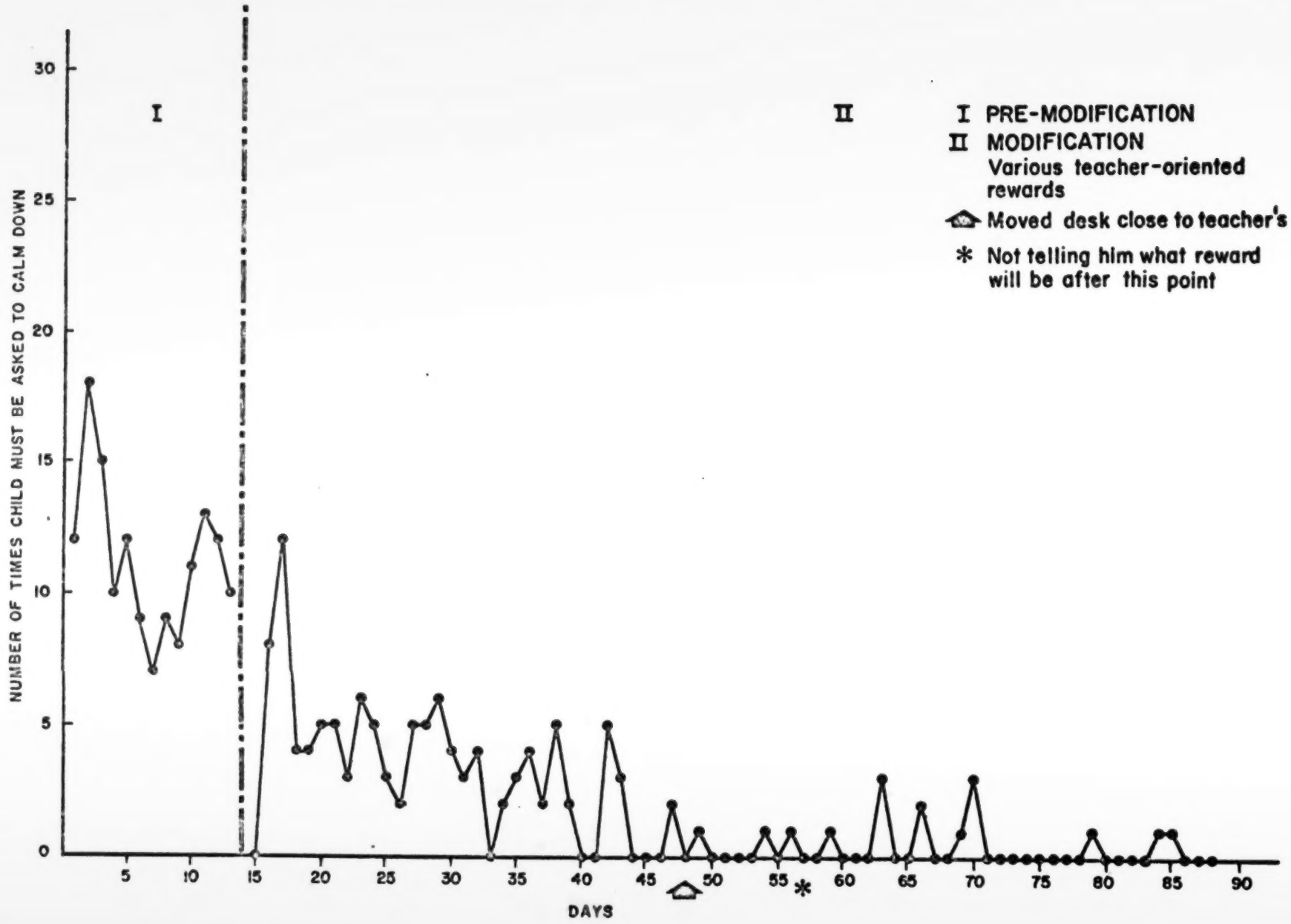
behavior at 60% or above to obtain the same reward. All four points were within the necessary limits. At that time, the contingency was modified (II_3) to 80% or above and the nondisruptive behavior was not maintained. A marked decrease in nondisruptive behavior occurred and for six sessions no point was recorded above 80%. Only once did he reach the criterion point of 80% (session 37) and obtained the reward. It was decided at this point to return to the 60% level (II_4) and for eight sessions the criterion was successfully met. The 80% contingency (II_5) was reintroduced and all seven points indicated that the nondisruptive behavior was maintained at that level. Unfortunately, no post-modification data were collected.

Graph A-2. This graph indicates the results of a modification of disruptive behavior in a boy whose teacher decided to count the number of times during the day that she had to ask him to calm down. Before beginning the present study, she had been asking him to put his head down on his desk when he was being too bothersome. The child usually fell asleep and would sleep until awakened.

During the 13 day pre-modification phase the teacher counted the number of times she had to ask the child to calm down. She no longer asked him to put his head down. During pre-modification (I) the frequency of teacher reprimand ranged from 7 to 18 times per day. Since the boy had frequently expressed affection for the teacher, teacher attention and teacher oriented rewards were introduced as possible reinforcers (II). For 18 days the teacher rewarded

GRAPH A-2

MODIFICATION OF HYPERACTIVITY IN 6 YEAR OLD BOY BY TEACHER



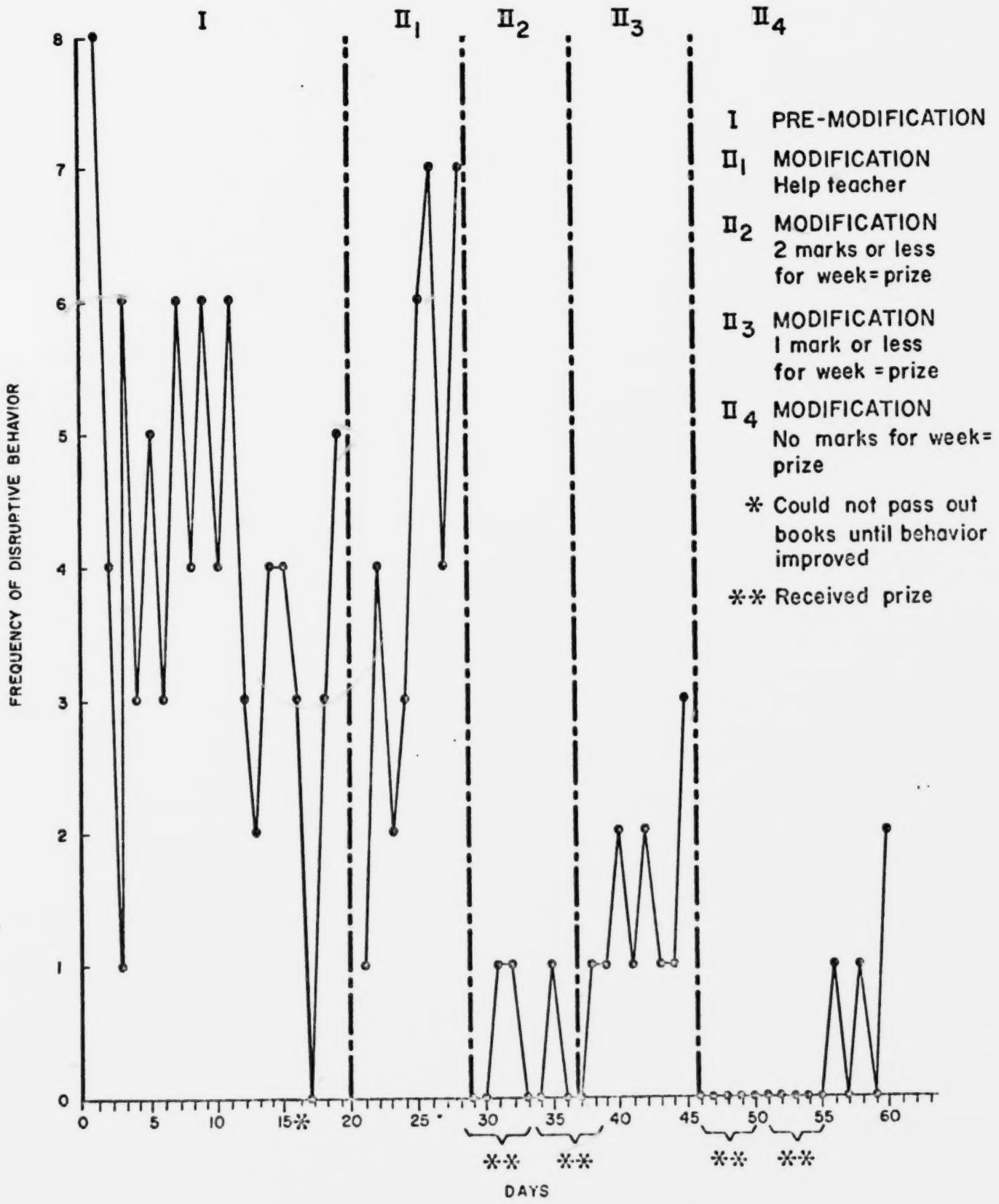
the child every time the frequency of asking him to "calm down" was less than the preceding day, until day 32, when she did not ask him to "calm down." On day 48, the child expressed a desire to sit near the teacher. She allowed him to move his desk close to hers on the provision that he would "be good." For the next 28 days, no point on the graph is higher than 3 and there are 20 days on which no reprimands were made. No post-modification data were collected.

Graph A-3. A 14 year old, 8th grade boy was considered disruptive in class by his teacher. The boy could neither read nor write and his inability to complete class work undoubtedly contributed to his disruptive behavior. The specific behaviors which the teacher found distracting were: (1) changing seats, (2) talking when not supposed to, (3) incompleted work, and (4) taking from other students' desks. The teacher counted these four behaviors for one hour each day while the boy was in her class. For 20 days pre-modification data (I) were collected. The frequency of disruptive behavior ranged from 0 to 8 times per hour.

Most of the pre-modification points were between 3 and 6 times per hour. The first modification attempted (II_1) was allowing the boy to help the teacher if, in her opinion, he had emitted few disruptive responses. Modification (II_1) was not successful and perhaps even increased the frequency of disruptive behavior over the eight days it was in effect. For the second modification, (II_2) the consultants informed the boy that if he had only two marks on his data

GRAPH A-3

MODIFICATION OF DISRUPTIVE BEHAVIOR OF
14 YEAR OLD MALE BY TEACHER



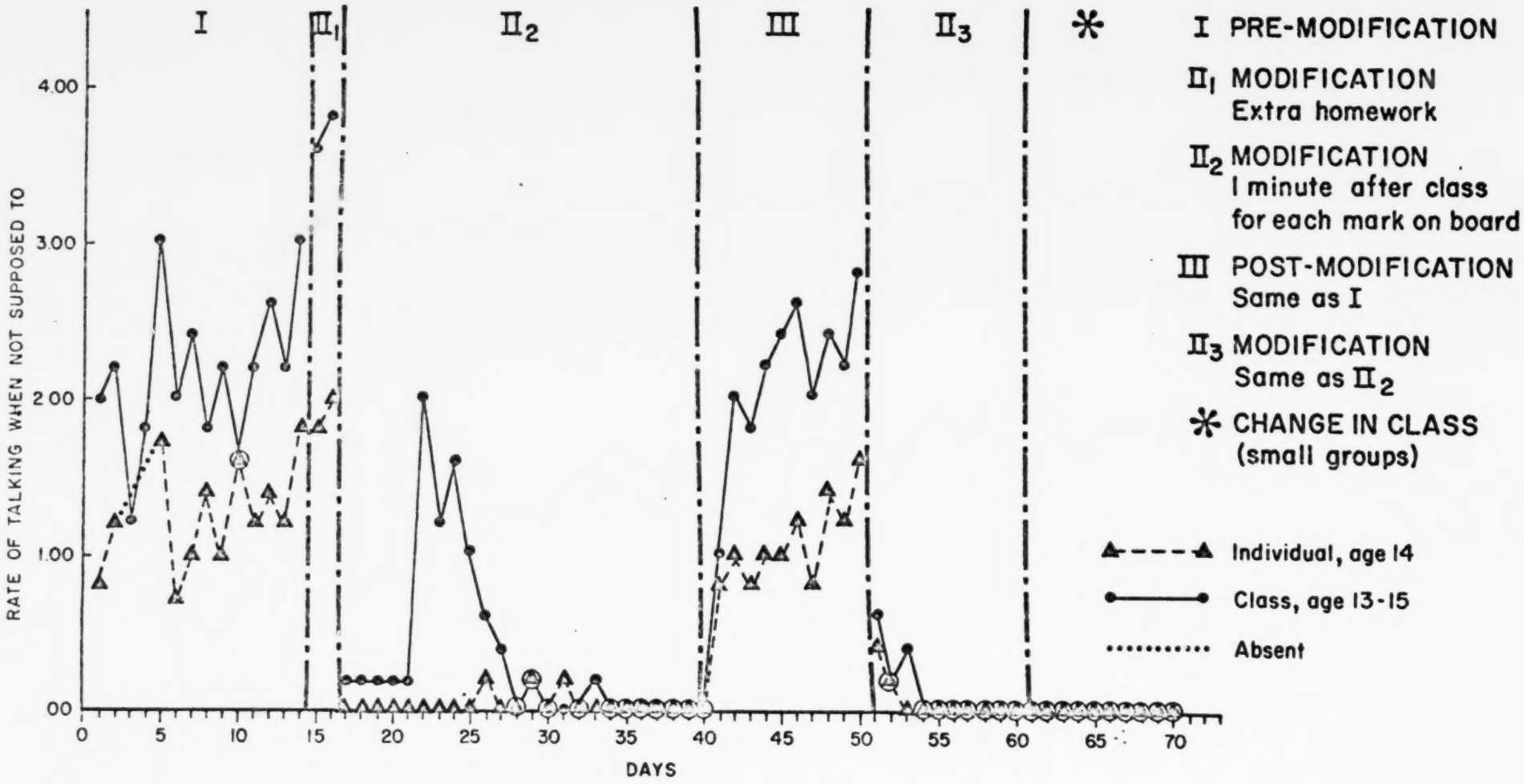
sheet for the entire week, he could earn a prize. However, if he had more than two marks, he would receive a punishment. He was not told what either the reward or punishment would be. The boy was also given a data sheet to record his behavior. In order to obtain the reward, he had to keep his data, get two marks or less for the week and have his data sheet agree with that of his teacher. The first week modification (II_2) was in effect, the boy earned a prize. The next week he was absent two days, but since he had only one mark for the three days that he was present, he earned another prize. The contingency was then adjusted (II_3) so that he could only have one mark per week for disruptive behavior. Unfortunately, he got five marks during that week and lost his data sheet as well. His first punishment consisted of working in the cafeteria after his lunch, thus depriving him of free time. The next week he also lost his data sheet. He was called into the office and given a sentence to copy. After approximately 40 minutes he was sent to class.

Beginning on day 46 modification (II_4) was instituted. In order to earn a prize he could have no marks on his data sheet for the week. For two consecutive weeks he earned prizes. The following week he received four marks for disruptive behavior and was sent to the Dean of Boys. No post-modification data were collected.

Graph A-4. The first group modification attempted by a teacher dealt with the class talking without permission. The data were plotted using rate as the dependent measure. The teacher wore a

GRAPH A-4

MODIFICATION OF TALKING BEHAVIOR
IN CLASS OF 27, AGES 13-15, BY TEACHER



wrist counter and, for a ten minute period each day, counted the number of times students talked out without permission. The group consisted of 27 junior high boys and girls. In addition to the group, the teacher counted separately the talking-out behavior of one boy who seemed to be a major component in the noise level. The first 14 days, (I) the teacher simply counted the frequency of the behavior.

The pre-modification phase indicated that the rate of talking-out per minute was between 1.2 and 3.0 for the group and between .70 and 1.80 for the individual. The first modification (II_1) consisted of giving extra homework problems for any person who talked without permission in the class. The graphed data indicated that the first contingency was not effective, so modification (II_2) was introduced. The teacher put marks on the board every time he had to speak to someone for talking out. For each mark on the blackboard at the end of the class period, the entire group remained in class one minute longer. This contingency seemed to work for the individual and brought his talking-out behavior close to zero for most of the 22 days it was in effect. The group's frequency did not decrease to zero until after the Christmas holiday.

The post-modification phase (III) consisted of putting the marks on the board, but not making the class stay late for getting marks. This phase continued for 11 days and talking behavior steadily increased for both the group and the individual.

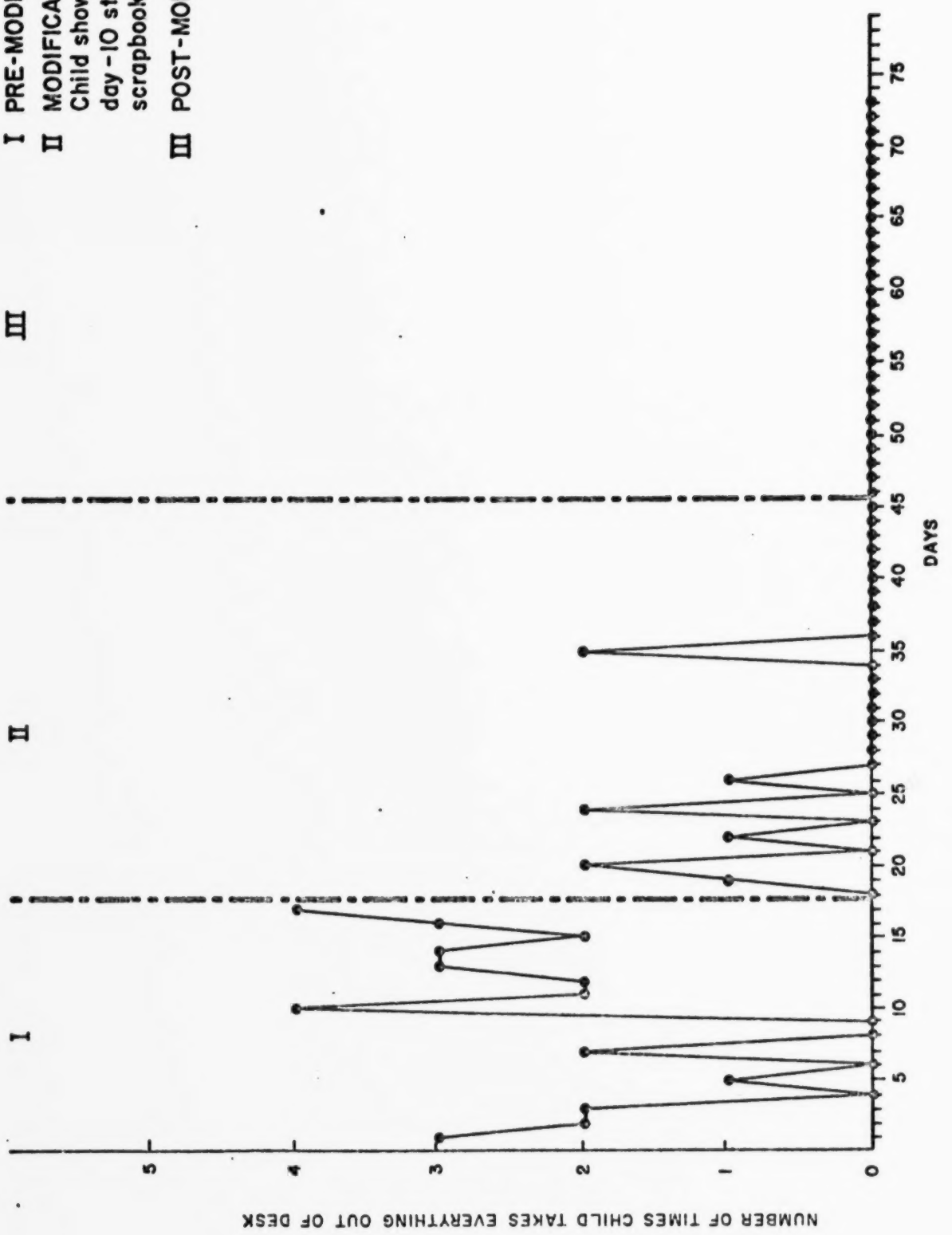
The modification phase (II_3) was reinstated, and within four days the talking behavior dropped to zero and remained there.

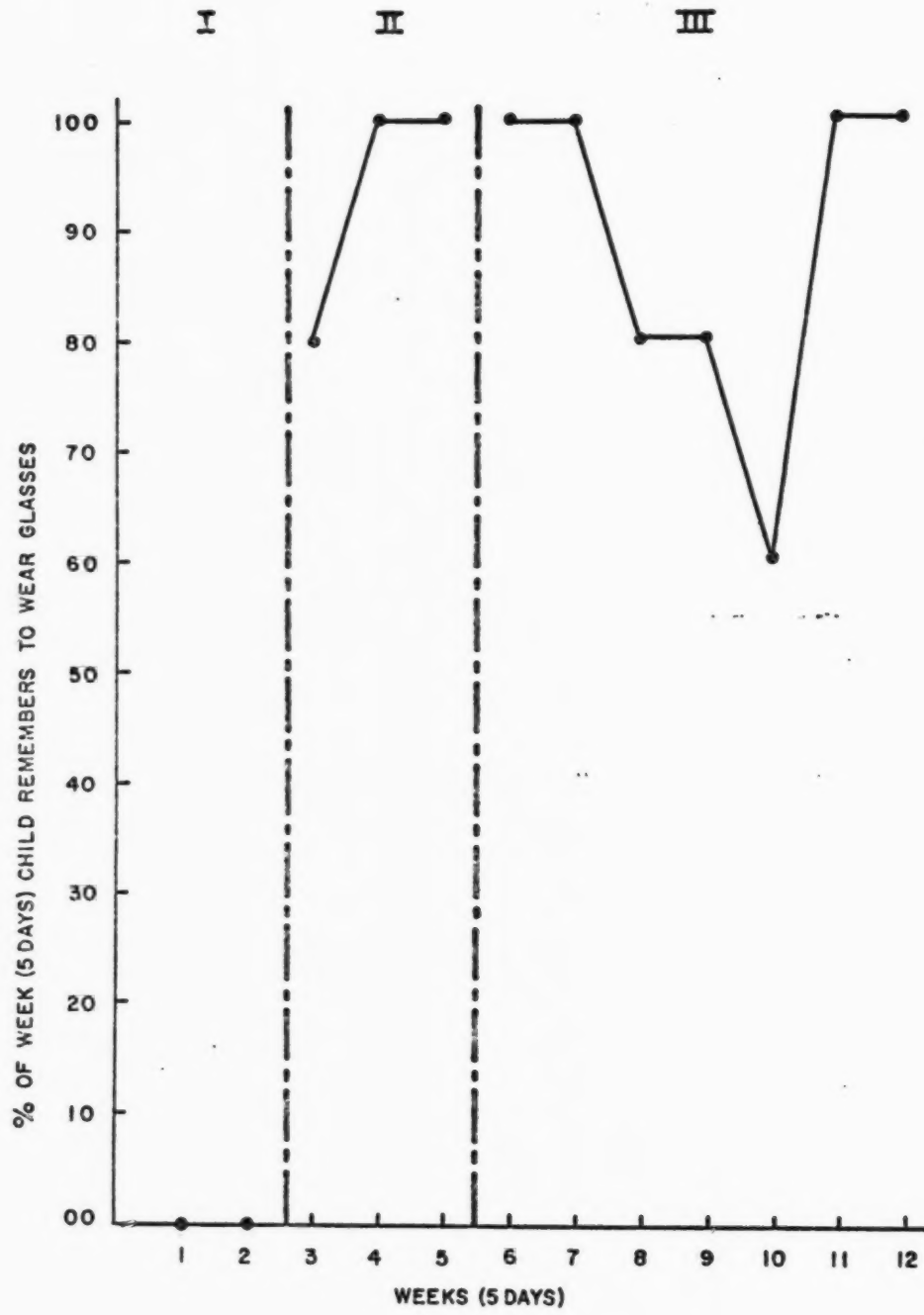
Graph A-5. A 12 year old boy in one class consistently took everything out of his desk whenever he wanted anything from inside his desk. The entire contents of his desk were being removed and returned as many as four times per day. His teacher began counting how many times per day the behavior occurred and recorded the pre-modification (I) data for 17 days. During the modification phase (II), she showed the child his graph and told him that if he did not take everything out of his desk for ten consecutive days she would give him a scrapbook. The child earned ten consecutive zeros and received his scrapbook on day 45. During the post-modification phase (III), the teacher continued to record the number of times the child took everything out of his desk. No reward was made contingent on the behavior. During this phase the child did not take everything out of his desk once.

Graph A-6. This graph indicates the results of a modification of behavior in a 10 year old boy who was supposed to be wearing his glasses all the time but was consistently forgetting to bring them to school or wear them if he did bring them. During this study, his teacher greeted the child each morning at the bus and recorded whether or not he was wearing his glasses. The data were plotted as

GRAPH A-5

MODIFICATION OF TAKING-EVERYTHING-OUT-OF-DESK IN 12 YEAR OLD MALE BY TEACHER





GRAPH A-6

MODIFICATION OF GLASSES-WEARING BEHAVIOR OF A 10 YR OLD MALE BY TEACHER

I PRE-MODIFICATION

II MODIFICATION
M&M's

III POST-MODIFICATION

the percentage of the week he remembered to wear glasses. In the first two weeks or pre-modification period (I) the boy did not once remember to wear his glasses. The modification (II) was then begun. Each day the teacher greeted the boy at the bus stop and recorded whether or not he was wearing his glasses. Each time he wore his glasses, she gave him an M&M candy. The first week of modification, he remembered his glasses 80% of the time, and for the following two weeks he remembered them 100% of the time. The M&M's were then made non-contingent (III). For two weeks he continued to wear his glasses 100% of the time, but in the third and fourth weeks, remembered them only 80% of the time. His rate dropped to 60% in the fifth week of post-modification and then rose to 100% for two weeks.

Graph A-7. This graph indicates the results of a group modification of rule-breaking behavior. The teacher posted three class rules: (1) raise hand for permission to speak, (2) obtain permission to leave seat, (3) respect the rights of others. The independent variable was days and the dependent variable was the mean number of rules broken by the group. The pre-modification data (I) were collected and recorded for nine days. The range during this phase was between 2.5 and 7.2. The modification (II) consisted of giving each child five tokens at the beginning of each day and removing one each time a rule was broken. Each token was redeemable for one penny at the end of each school day. The range was between .2 and 4.0.

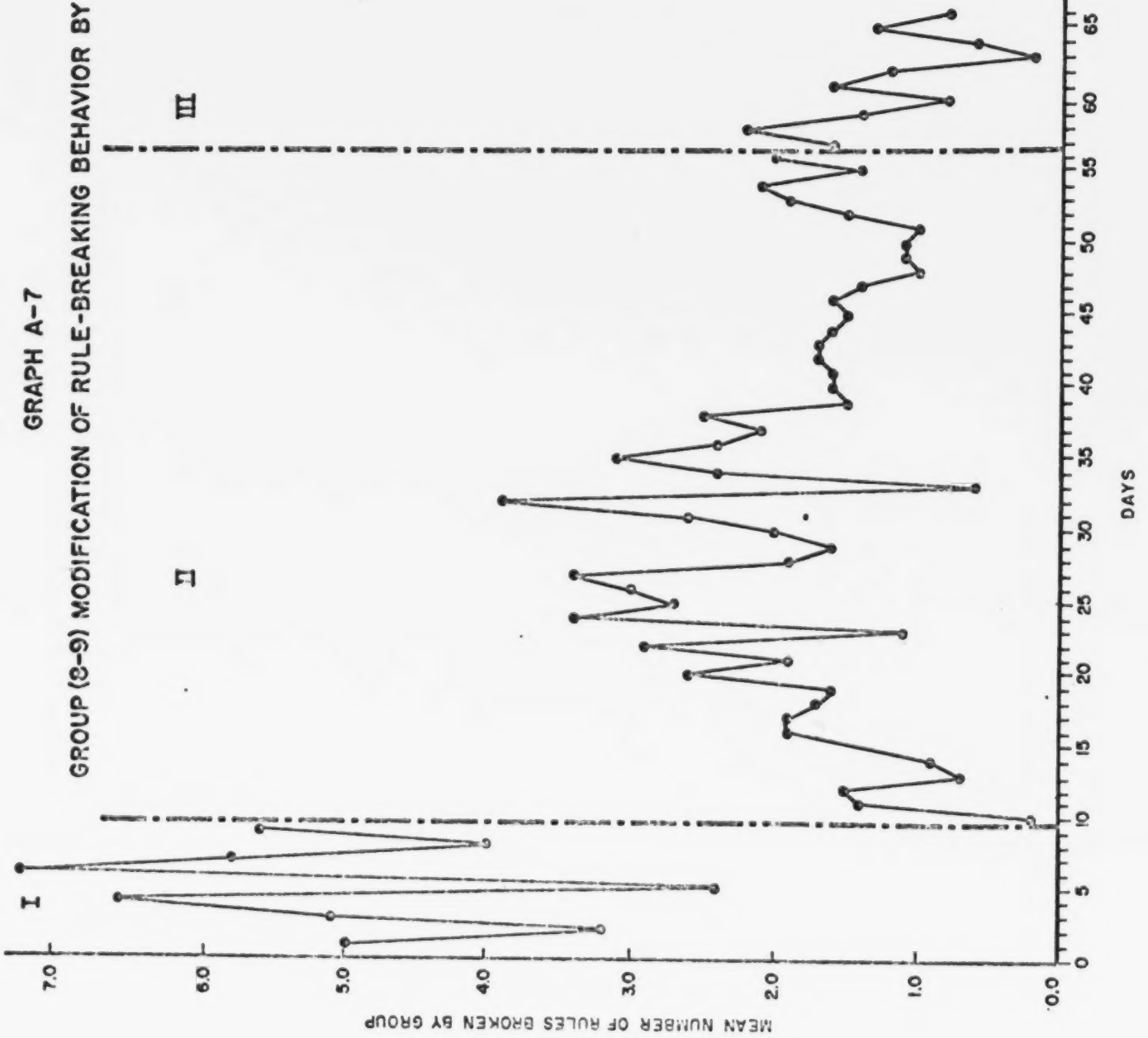
GRAPH A-7

GROUP (8-9) MODIFICATION OF RULE-BREAKING BEHAVIOR BY TEACHER

I PRE-MODIFICATION

II MODIFICATION
Each child given 5 tokens/day.
Loses 1 for each rule broken.
1 token = 1 penny at end of day.

III POST-MODIFICATION



During post-modification (III) the tokens were not given, however the teacher continued to count and record the mean number of rules broken by the group. The range was between .2 and 2.2.

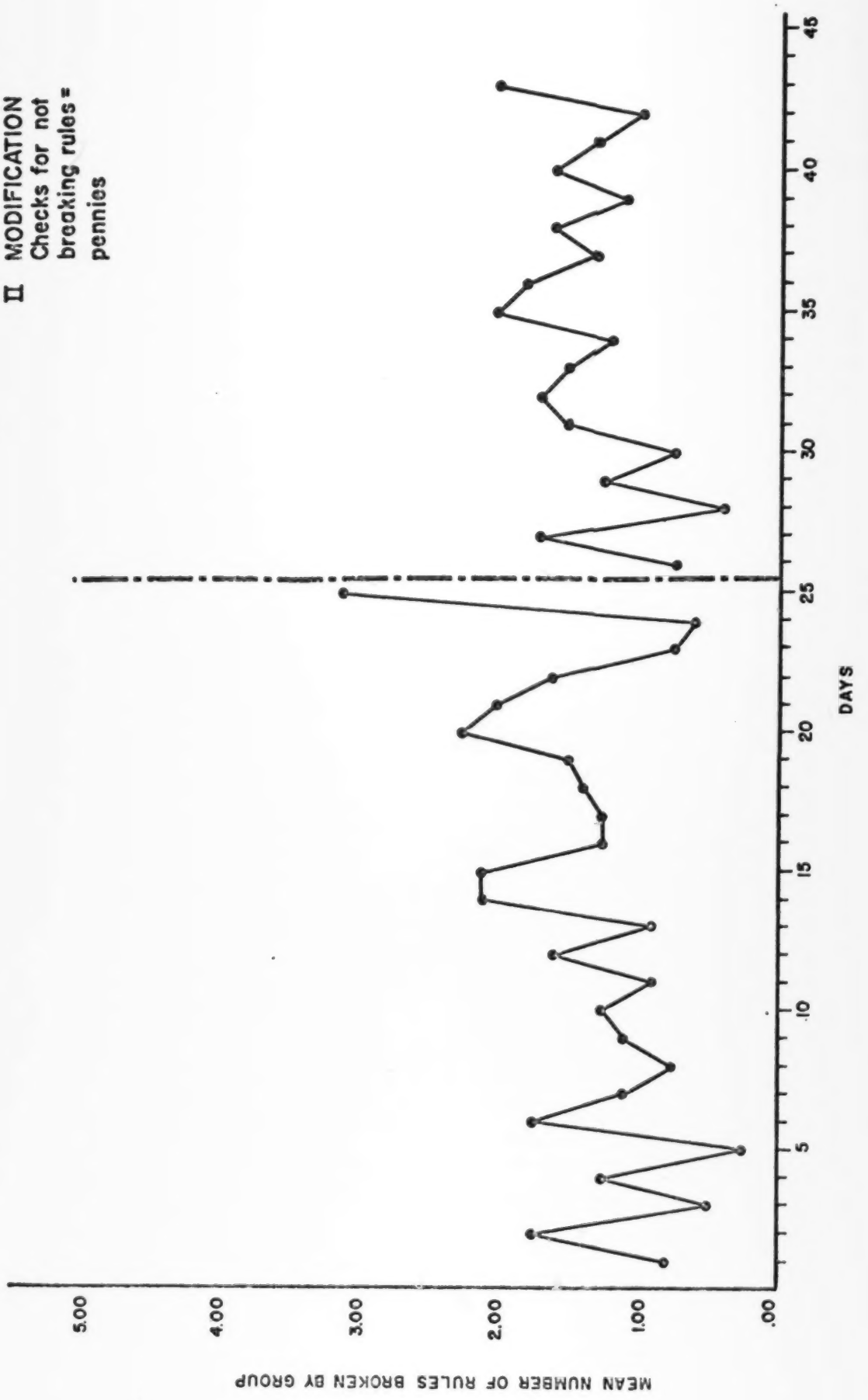
Graph A-8. Some of the members of the group depicted in graph A-7 were transferred to other classes. New students were added to the original class. The teacher decided to replicate her original behavior modification with the new group. Unfortunately the means for the pre-modification (I) and the modification (II) phases were identical, i.e. 1.4.

Graph A-9. Modification of disruptive behavior of a seven year old boy was directed toward the elimination of tattling, interrupting and hitting behaviors. The mean computed for the pre-modification phase (I) was 12.5. The modification (II) consisted of the teacher giving the child a star for what was, in her opinion, "good" behavior. Two stars could be earned per day. The mean for this phase was 6.3 disruptions per day.

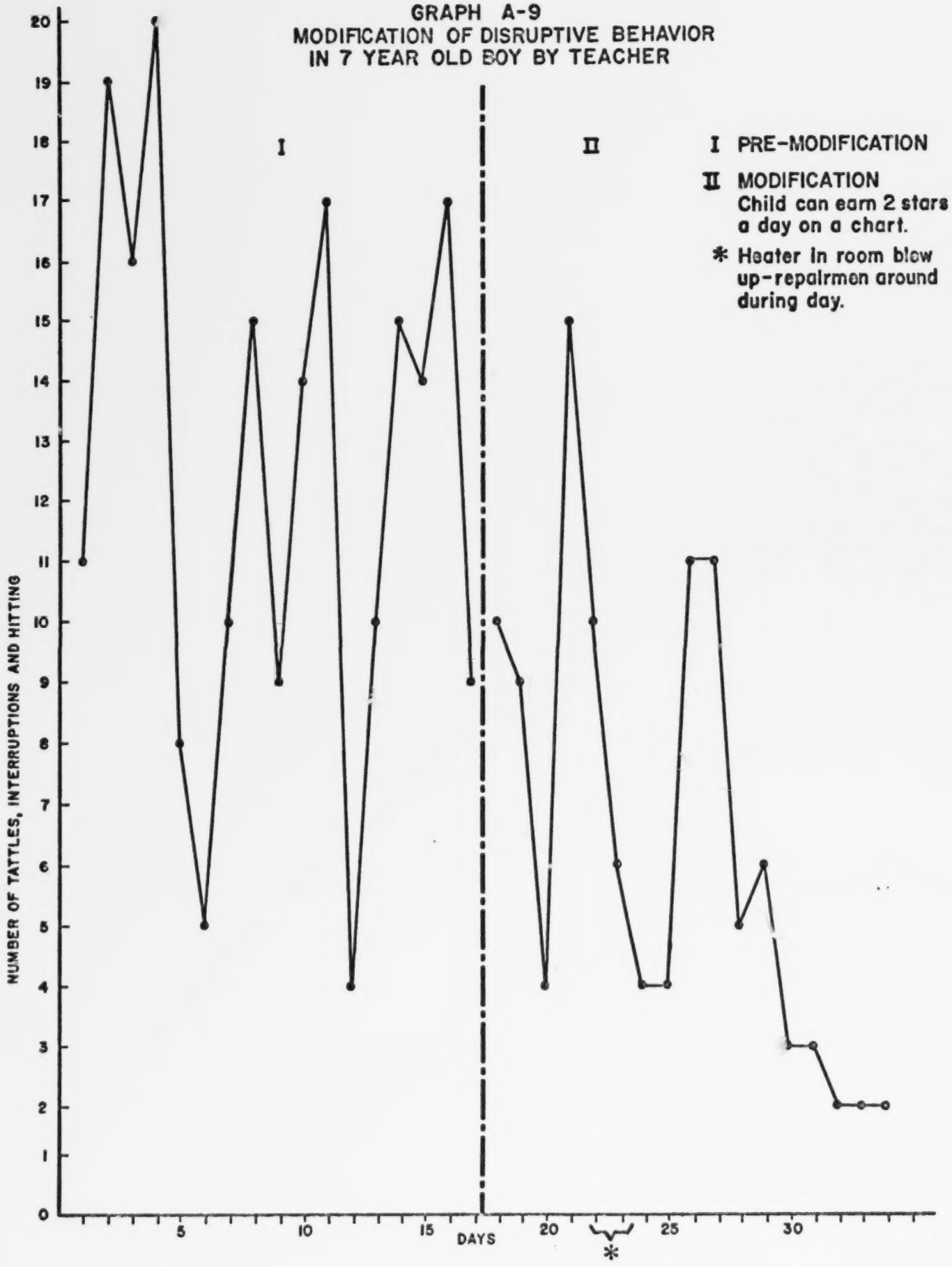
Graph A-10. One teacher recorded the rate of inappropriate talking and laughing by a seventh-grade boy. Over a five week period the plotted behavior decreased without a planned modification. During the last week of data the teacher reported three incidents which he felt contributed to the decrease. The three incidents included (1) report card, (2) more interesting material in class, and (3) referred to the Dean of Boys.

GRAPH A-8

MODIFICATION OF RULE-BREAKING BEHAVIOR IN A GROUP OF 8 BY TEACHER



GRAPH A-9
MODIFICATION OF DISRUPTIVE BEHAVIOR
IN 7 YEAR OLD BOY BY TEACHER



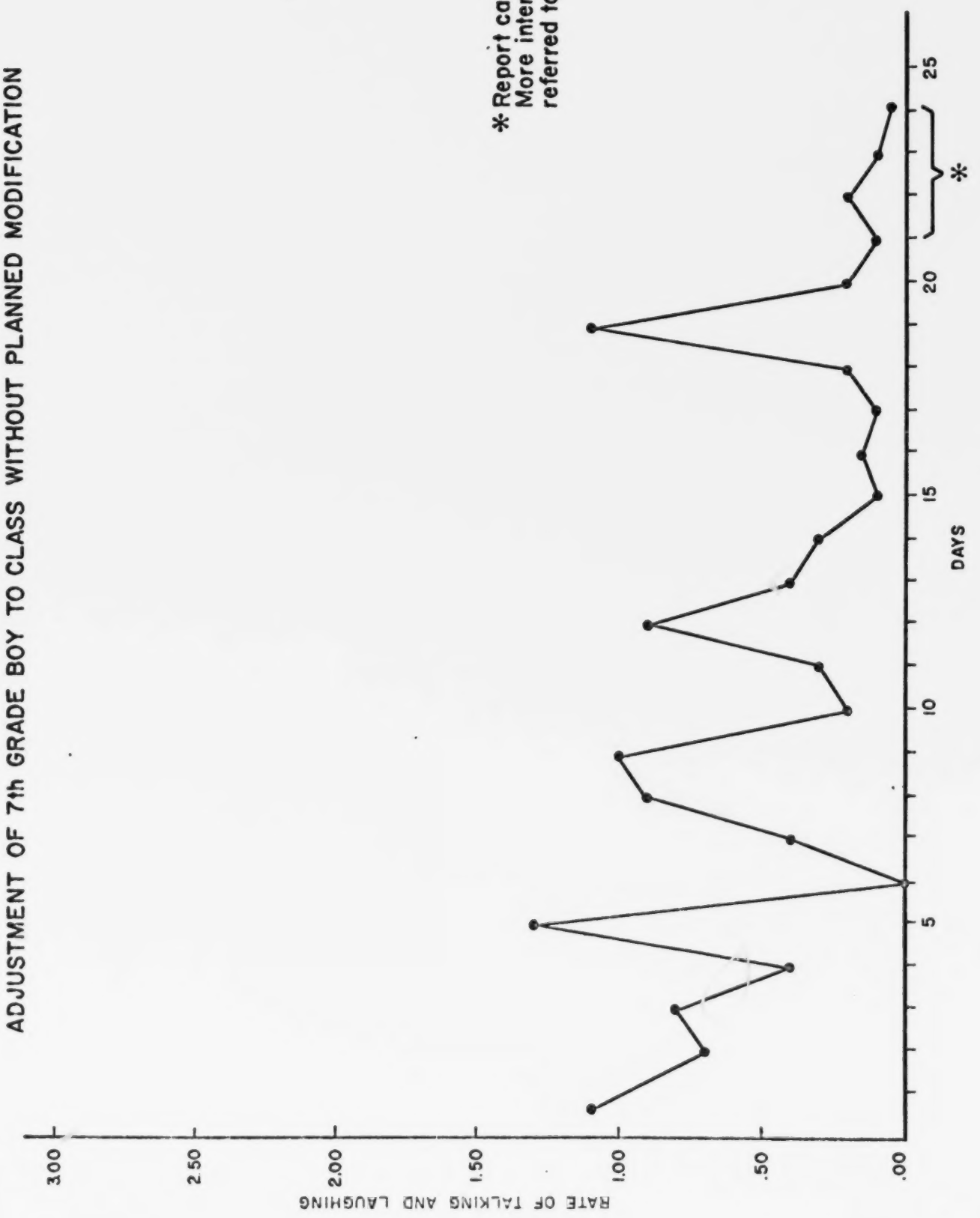
I PRE-MODIFICATION

II MODIFICATION
Child can earn 2 stars a day on a chart.

* Heater in room blew up-repairmen around during day.

GRAPH A-10

ADJUSTMENT OF 7th GRADE BOY TO CLASS WITHOUT PLANNED MODIFICATION



* Report card time
More interesting material
referred to Dean.

Graph A-11, A-12, A-13. When the behavior modification project was initiated three teachers, working as a team, had already set up contingency managed classrooms. All three teachers had begun identical modifications with groups of exceptional children. Tokens were made contingent upon school work, attitude and behavior. A total of nine tokens could be earned per day.

The mean of the modification data (I) depicted in graph A-11 was 8.6. During post-modification (II) when the tokens were noncontingent the mean decreased to 7.0. When the modification conditions were reintroduced the mean number of tokens increased to 8.0.

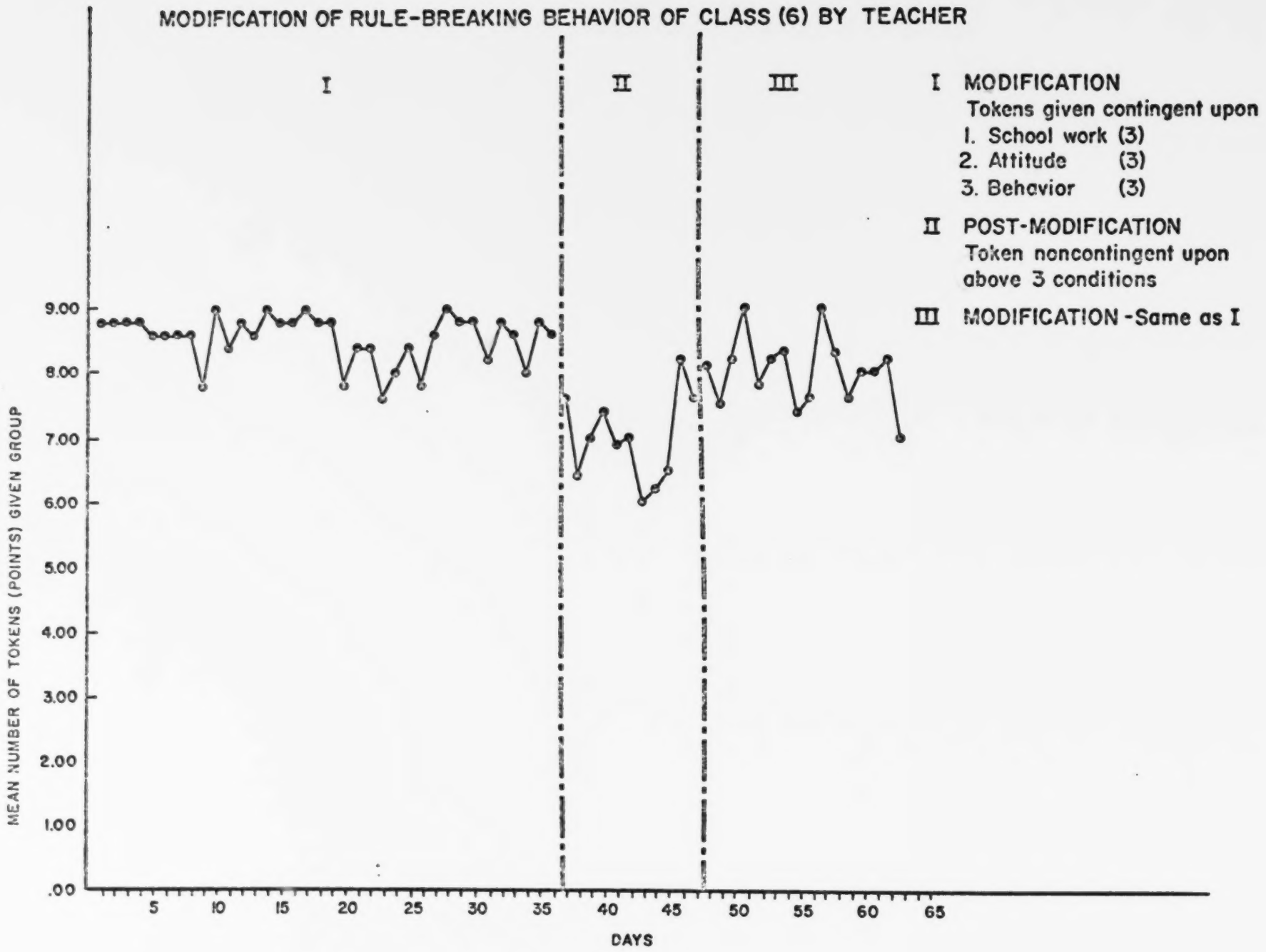
By comparison the mean of the modification data (I) in graph A-12 was 7.7. During post-modification (II) the mean decreased to 6.6 and increased to a mean of 8.0 tokens when the modification conditions were reinstituted (III).

Graph A-13 depicts only the modification data. A mean of 7.7 tokens were given over the 22 data days. The teacher was reluctant to make the tokens noncontingent so no post-modification condition was initiated.

Graph A-14. The number of "bad attitude" responses made by a class and by one individual in the class was plotted in Graph A-14. The 19 sessions of pre-modification (I) data yield means of 1.3 "bad attitude" responses for the individual and .7 for the group. The modification (II) consisted of giving the entire group a piece of candy if there were no "bad attitude" responses for the day. The

GRAPH A-II

MODIFICATION OF RULE-BREAKING BEHAVIOR OF CLASS (6) BY TEACHER



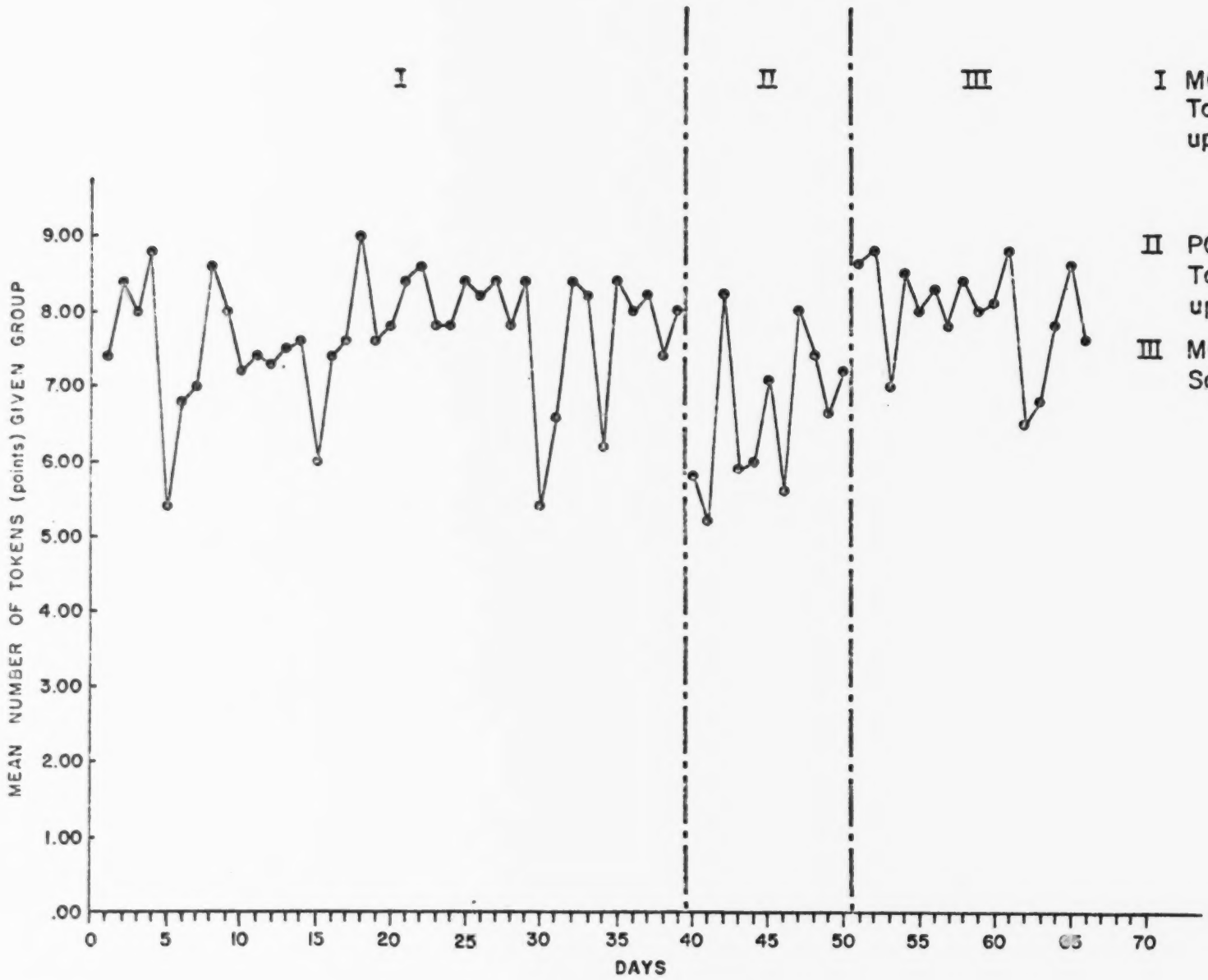
I MODIFICATION
Tokens given contingent upon
1. School work (3)
2. Attitude (3)
3. Behavior (3)

II POST-MODIFICATION
Token noncontingent upon above 3 conditions

III MODIFICATION - Same as I

GRAPH A-12

MODIFICATION OF RULE-BREAKING BEHAVIOR
OF CLASS (8) BY TEACHER



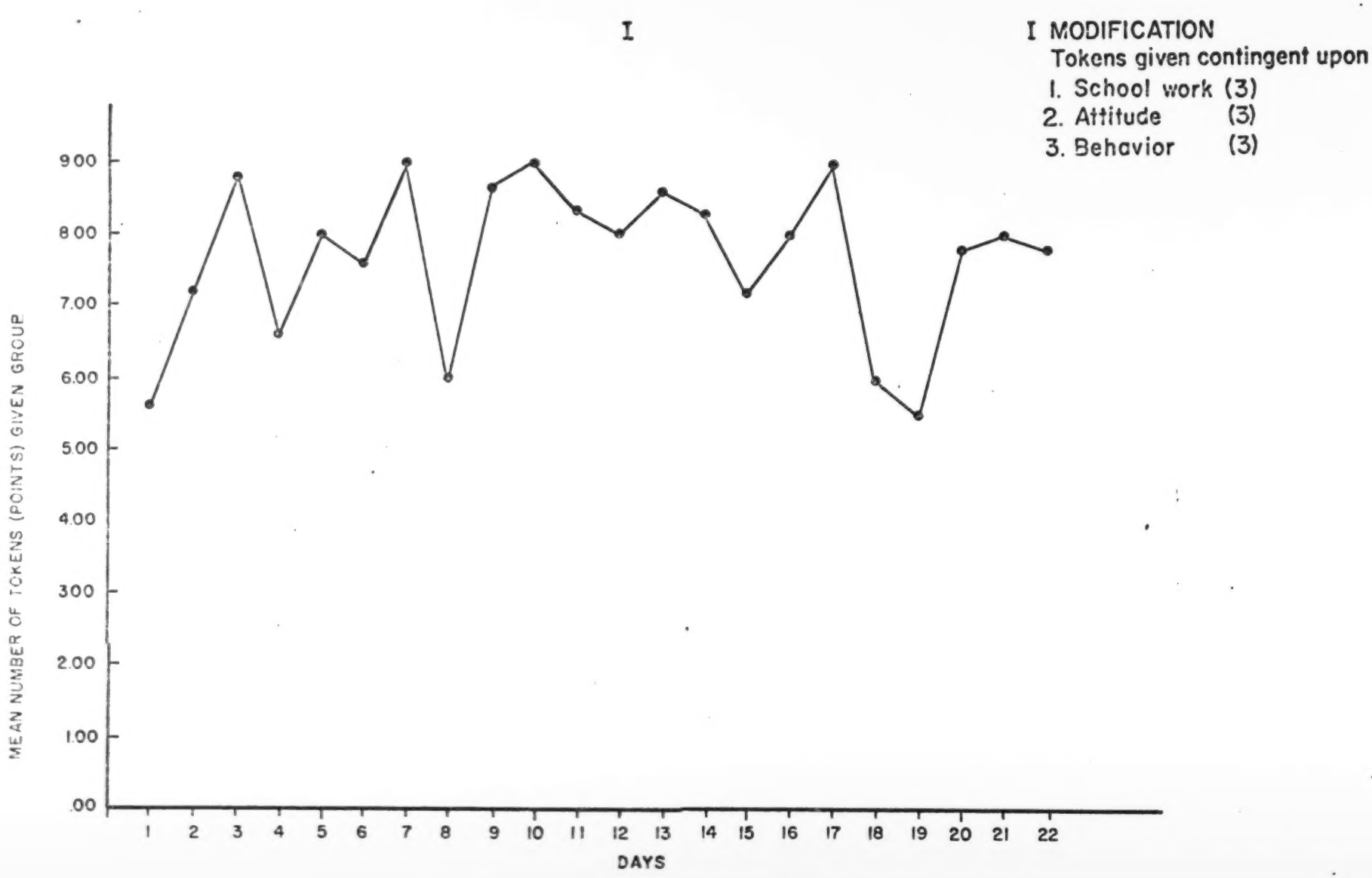
I MODIFICATION
Tokens given contingent
upon 1. school work (3)
2. attitude (3)
3. behavior (3)

II POST-MODIFICATION
Tokens non-contingent
upon above 3 conditions

III MODIFICATION
Same as above I

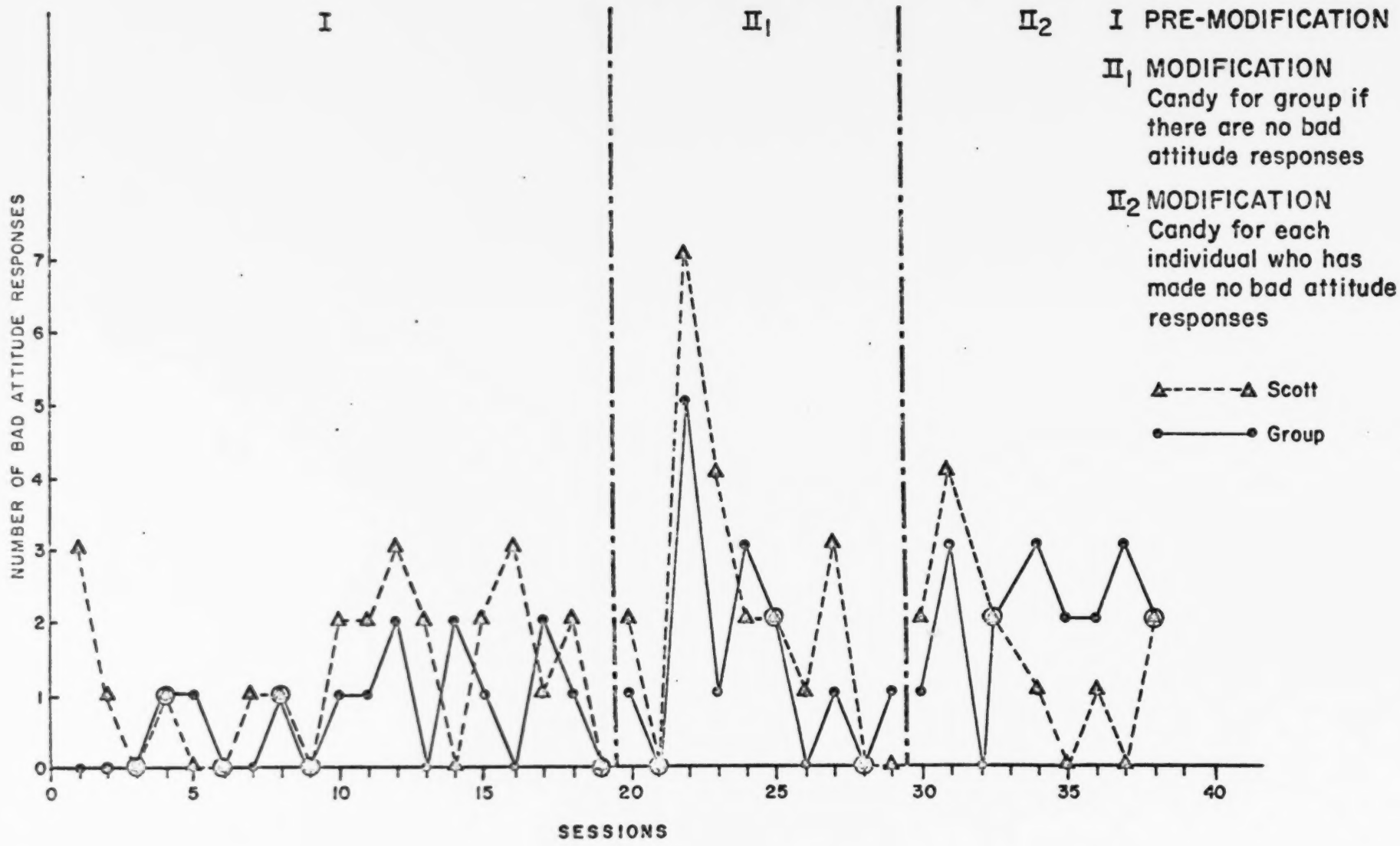
GRAPH A-13

MODIFICATION OF RULE-BREAKING BEHAVIOR OF CLASS (7) BY TEACHER



GRAPH A-14

MODIFICATION OF BAD ATTITUDE RESPONSES
IN INDIVIDUAL AND GROUP BY TEACHER



I PRE-MODIFICATION

II_1 MODIFICATION
Candy for group if there are no bad attitude responses

II_2 MODIFICATION
Candy for each individual who has made no bad attitude responses

Scott

Group

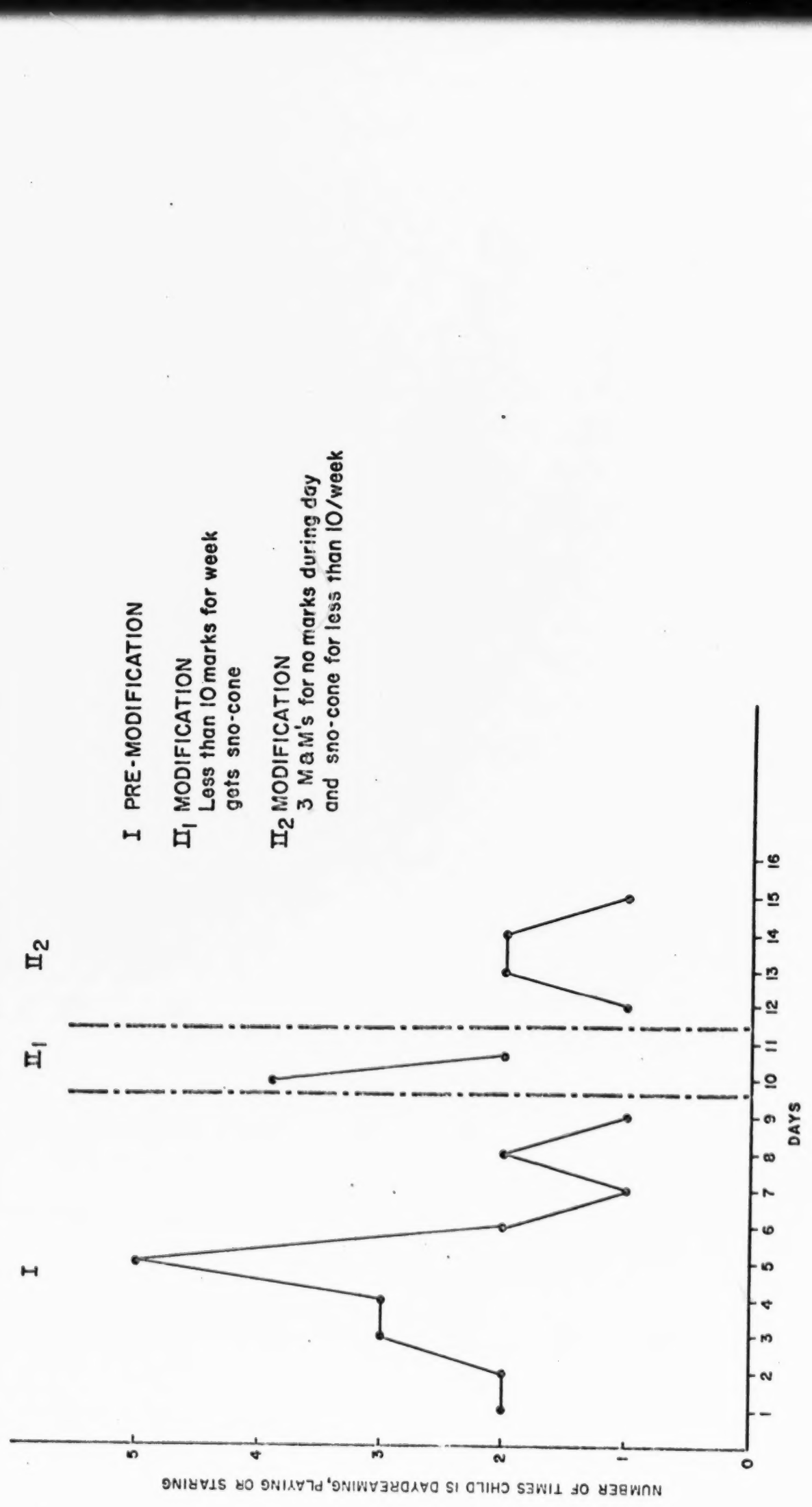
modification condition was in effect for 9 days and the means were 2.1 for the individual and 1.4 for the group. Since the first modification did not bring about a change in the desired direction, a second modification was attempted (II_2). The second modification differed from the first in that candy was given to the children on an individual basis, that is, each individual who made no "bad attitude" responses received a piece of candy. The means for the 9 days of this phase were 1.6 for the individual and 2.0 for the group.

Graph A-15. A modification of inattentiveness of a 9 year old girl was attempted by one teacher. The specific behaviors counted were daydreaming, staring and playing. During the nine days of pre-modification (I), the mean number of times the child was inattentive was 2.3 per day. The first modification (II_1) consisted of promising the child a sno-cone if she received less than ten marks for the entire week. The mean during phase (II) increased to 3.0. On day 12 the teacher promised the child three M&M's if she received no marks for the day in addition to the sno-cone for less than 10 marks for the week, thus initiating modification two (II_2). The mean during that phase was 1.5.

Graph A-16. Graph A-16 depicts the modification of tardiness and forgetting pencil and paper. The subject is the same as that of Graph A-15. During the pre-modification phase (I) the child forgot pencil and paper a mean of 50% of the week and was tardy a mean of

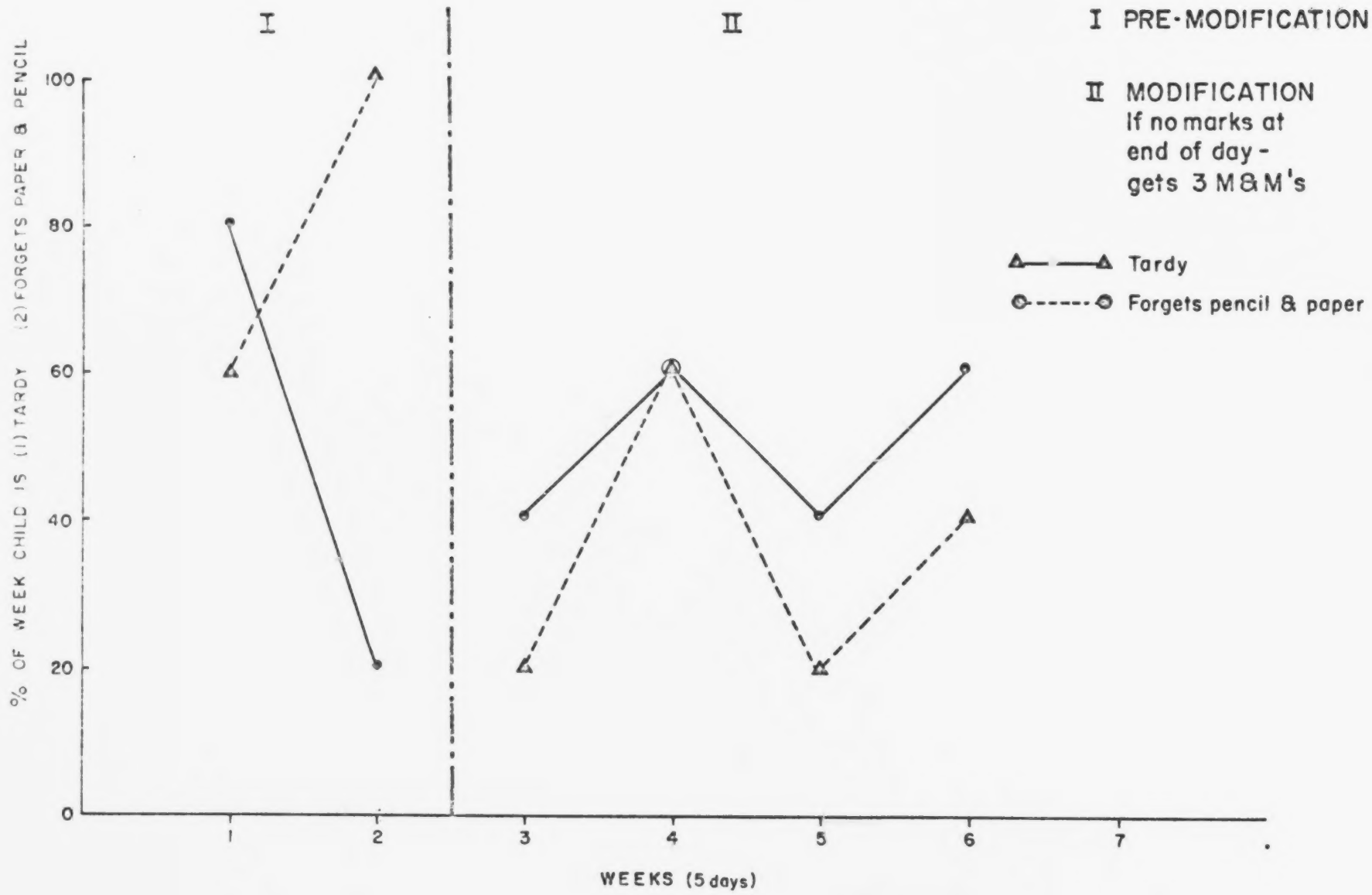
GRAPH A-15

MODIFICATION OF INATTENTIVENESS OF 9 YR OLD GIRL BY TEACHER



GRAPH A-16

MODIFICATION OF TARDINESS AND FORGETTING
PENCIL and PAPER IN 9-YR OLD GIRL BY TEACHER



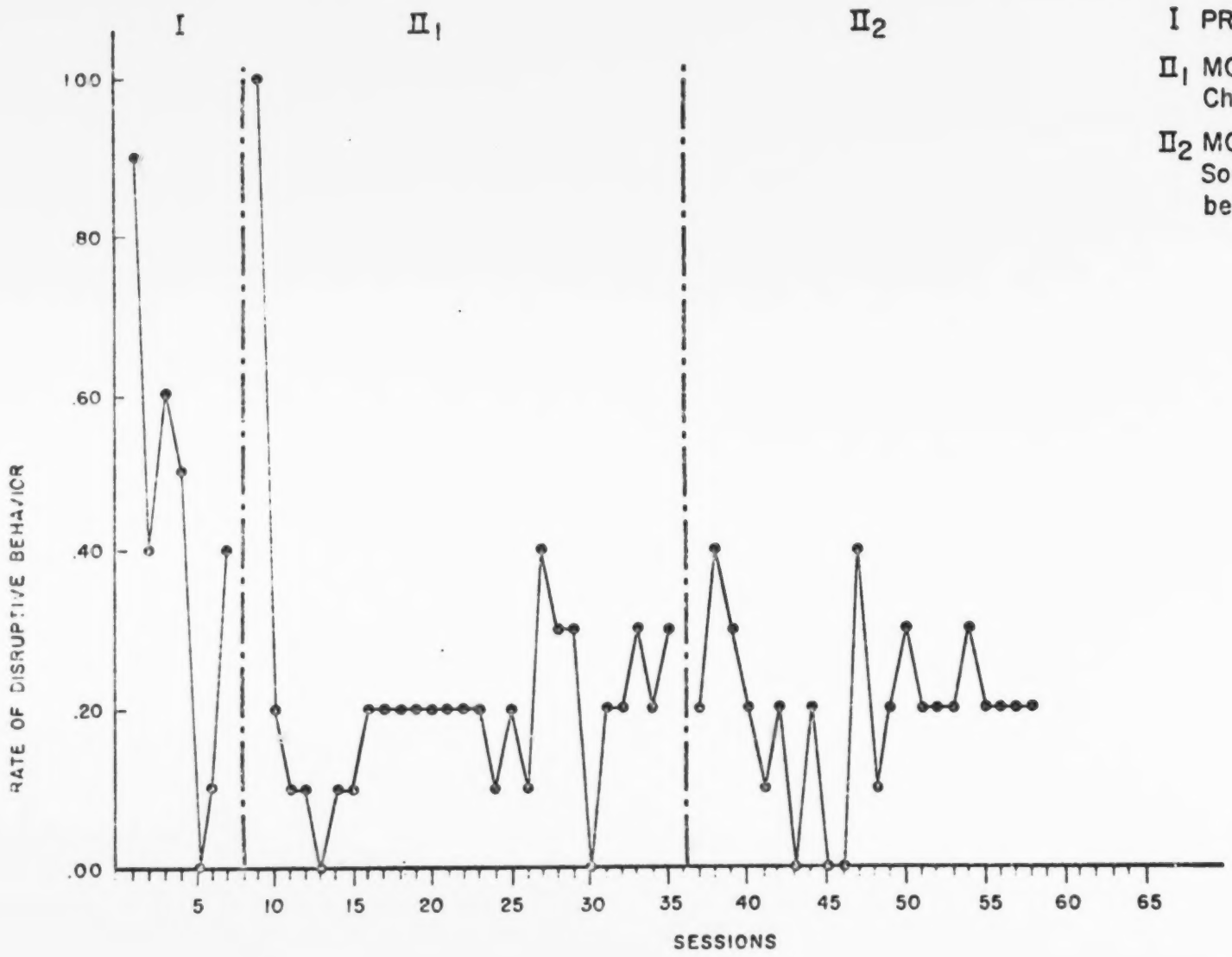
80% of the week. The modification (II) included giving the child three M&M's at the end of the day if she had not been tardy or forgotten her pencil and paper. Over four weeks of modification the child was tardy a mean of only 35% of the week but continued to forget her pencil and paper a mean of 50% of the week. This change represents an improvement in frequency of tardiness but no change in the number of times she forgot her pencil and paper.

Graph A-17. Disruptive behaviors counted by a teacher and plotted by rate in Graph A-17 included: (1) playing with or combing hair, (2) rocking in chair, (3) putting his hand out the window, (4) staring out the window, (5) hitting or pushing other students, and (6) getting out of his seat without permission. The data were recorded for ten-minute periods twice daily. For seven sessions the teacher collected pre-modification (I) data. The mean rate of disruptive behavior was .41. The first modification (II_1) continued for 24 sessions and consisted of a change of seat for the child. The mean rate during this phase dropped to .21. During modification (II_2) the teacher gave the boy social rewards for points below .20 on the graph. This phase lasted for 22 sessions and yielded a mean rate of disruptions of .20.

Graph A-18, A-19, A-20. One teacher at the exceptional child center wished to employ a contingency which would be operating in the classroom all day. She first posted the class rules as follows: (1) students should raise their hands before speaking in class,

GRAPH A-17

MODIFICATION OF DISRUPTIVE BEHAVIOR OF 6 YEAR OLD BOY BY TEACHER



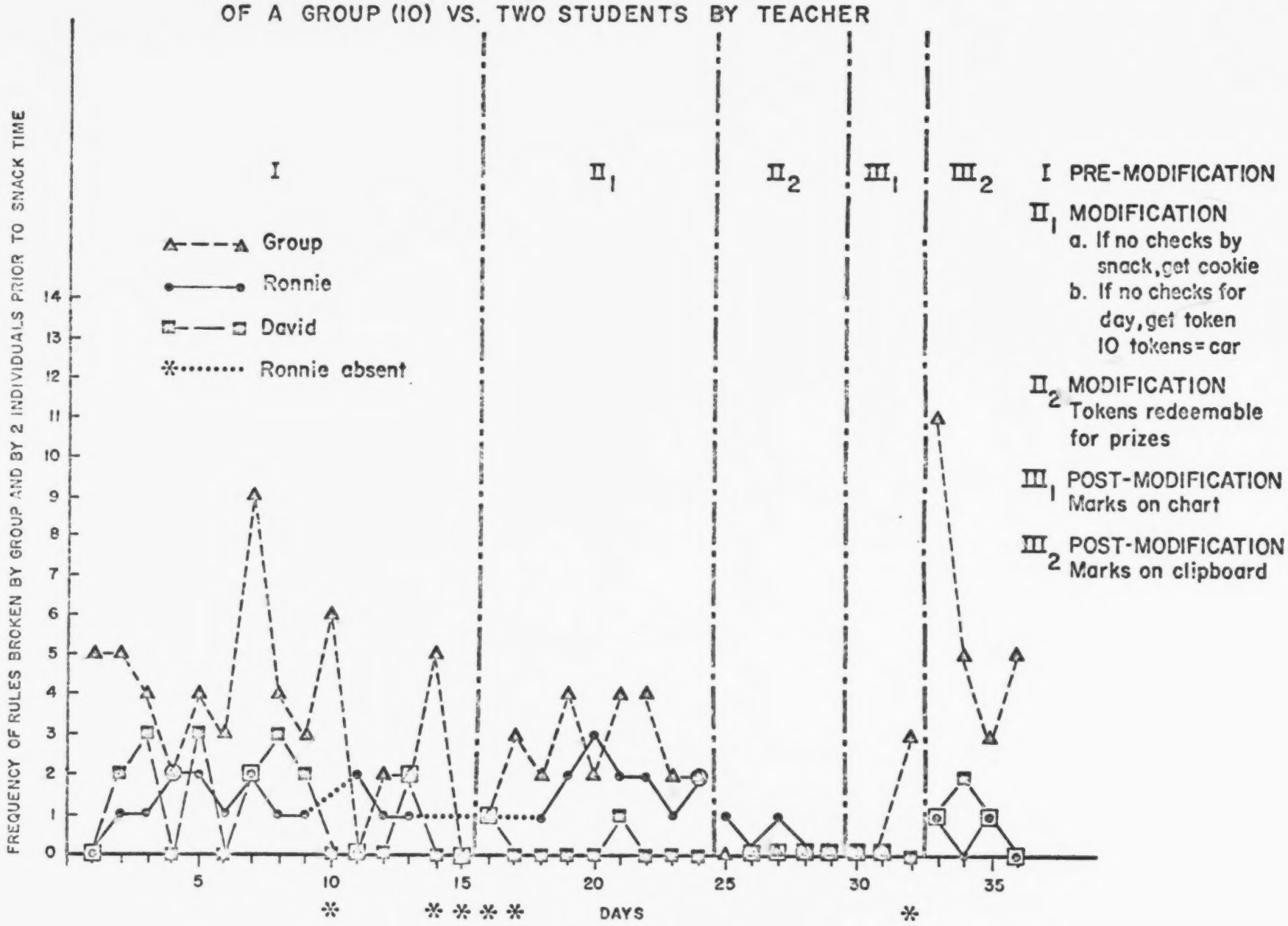
I PRE-MODIFICATION

II_1 MODIFICATION
Change of seat

II_2 MODIFICATION
Social reward for point below point .20

GRAPH A-18

MODIFICATION OF RULE - BREAKING BEHAVIOR
OF A GROUP (10) VS. TWO STUDENTS BY TEACHER



(2) students should ask permission before getting out of their chairs, (3) students should walk in an orderly fashion, (4) students should respect the rights of other students, and (5) students should observe table manners while eating. The school day was then divided into three time periods; (1) prior to snack time, (2) prior to lunch and (3) during lunch and prior to physical education. Each time period was graphed separately and is represented in graphs A-18, A-19 and A-20 respectively. In addition to counting number of rules broken by the group the teacher also counted number of rules broken by each of two individual students who seemed to her to be major causes of class disruptions.

Plotted on Graph A-18 is the frequency of rules broken prior to snack time.

The mean of the pre-modification data is 3.6 for the group, 1.4 for Ronnie and 1.1 for David. The modification (II_1) consisted of giving each child who had broken no rules prior to snack time, a cookie. Also the contingency which continued throughout the day rewarded each child having no checks for rules broken with one token. Ten tokens could be redeemed for a toy car. The mean number of rules broken during the modification by the group was 2.7, by Ronnie 1.8 and by David .2. The modification was then altered slightly as the teacher noticed that although some children earned a few tokens they did not have enough for a toy car. She then purchased a variety of small prizes labeling them with appropriate token values.

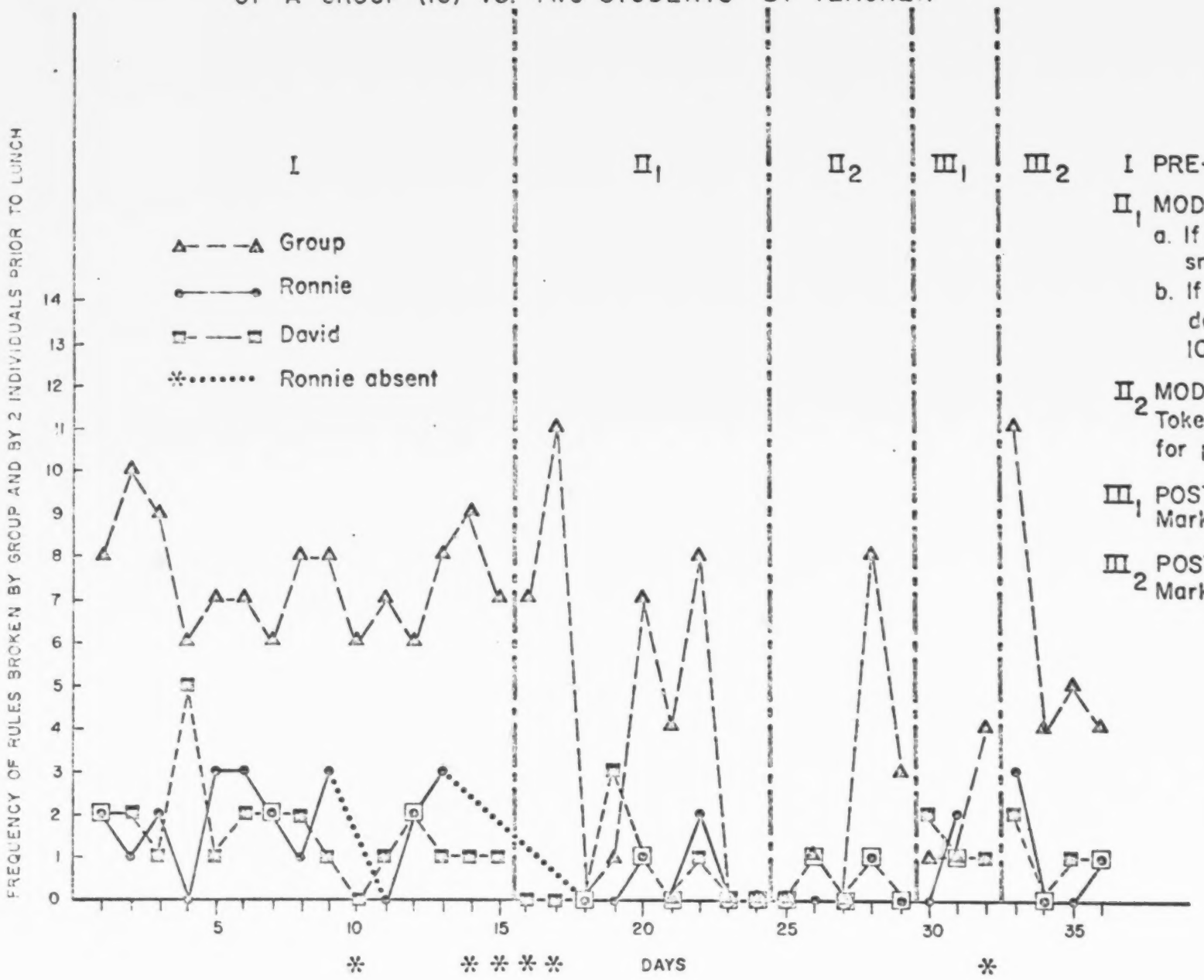
The same contingency was in effect, i.e., if no rules were broken for the day, the child earned one token (II_2). The group mean during the second modification dropped to zero. Ronnie broke a mean of .4 rules per day and David broke none. Post-modification sessions 30-32 (III_1) consisted of recording the marks for rules broken on a chart but giving no tokens. Mean number of rules broken by the group rose to 1.0, while Ronnie and David broke no rules. Post modification two (III_2) consisted of removing the chart and recording number of rules broken on the teacher's clipboard. During this phase the group mean rose to 6.0, Ronnie to .5 and David to .5.

The contingency and the rules were the same throughout the school day. All phases were defined in the same way as in Graph A-18.

Graph A-19 depicts the frequency of rules broken by the group and by the two individuals prior to lunch. The mean number of rules broken during pre-modification (I) was 7.5 for the group, 1.8 for Ronnie and 1.6 for David. During modification II_1 the mean dropped to 4.2 for the group, .4 for Ronnie and .6 for David. The second modification (II_2) reduced rule-breaking behavior further to a mean of 2.4 for the group, .2 for Ronnie and .4 for David. The first post-modification (III_1) did not have a great effect on rule-breaking as the means remained at a low level, i.e., 2.0 for the group, .5 for Ronnie and .3 for David. During the

GRAPH A-19

MODIFICATION OF RULE - BREAKING BEHAVIOR
OF A GROUP (10) VS. TWO STUDENTS BY TEACHER



second post-modification (III_2) the group mean rose to 6.0, Ronnie's to 1.0 and David's to 1.0.

Graph A-20 indicates the frequency of rule-breaking during lunch and prior to physical education. During pre-modification (I) the group mean was 5.5, Ronnie's was 1.0 and David's was 1.1. The first modification (II_1) decreased the group mean to 3.9, Ronnie's to .7 and David's to .7.

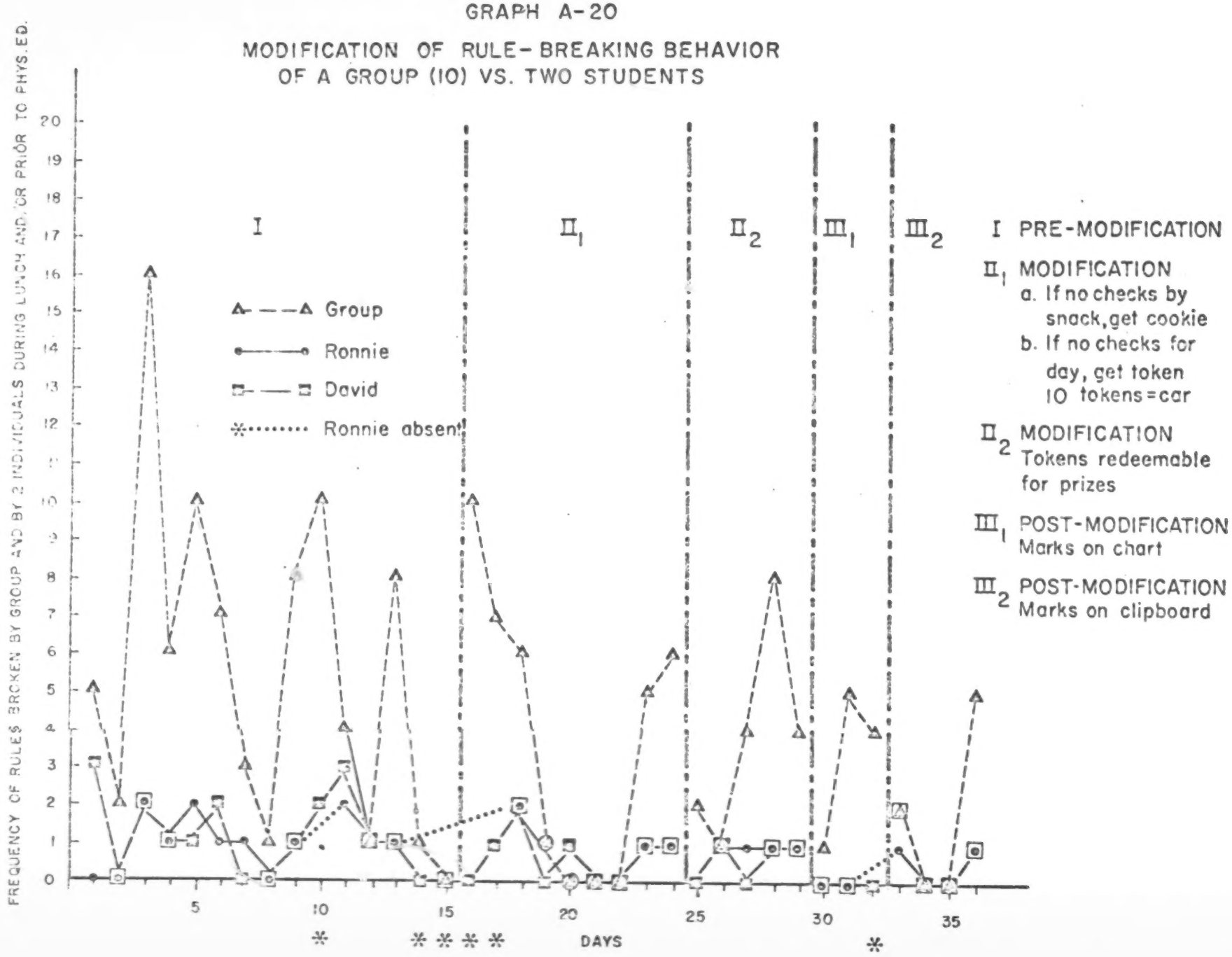
The mean number of rules broken during the second modification was 3.8 for the group, 1.2 for Ronnie and .6 for David. The post-modification (III_1) means were 3.3, 0 and 0 for the group, Ronnie and David respectively. The group mean further decreased under post-modification condition two (III_2) to 1.8 while the means for Ronnie (.5) and David (.8) increased.

Graph A-21. The same teacher who collected the data for Graphs A-18, A-19 and A-20 recorded the data shown in Graphs A-21, A-22 and A-23. After a change occurred in her class population she decided to continue recording rules broken and attempt a modification with the new group. The rules were the same as those previously used and the day was divided into the same three time periods. David was transferred to another class so the teacher recorded the rules broken by the group and by Ronnie.

During the first time period, prior to snack, the group mean during pre-modification (I) was 3.9. Ronnie had a mean of 1.5. The modification (II) consisted of giving each child a cookie if he had

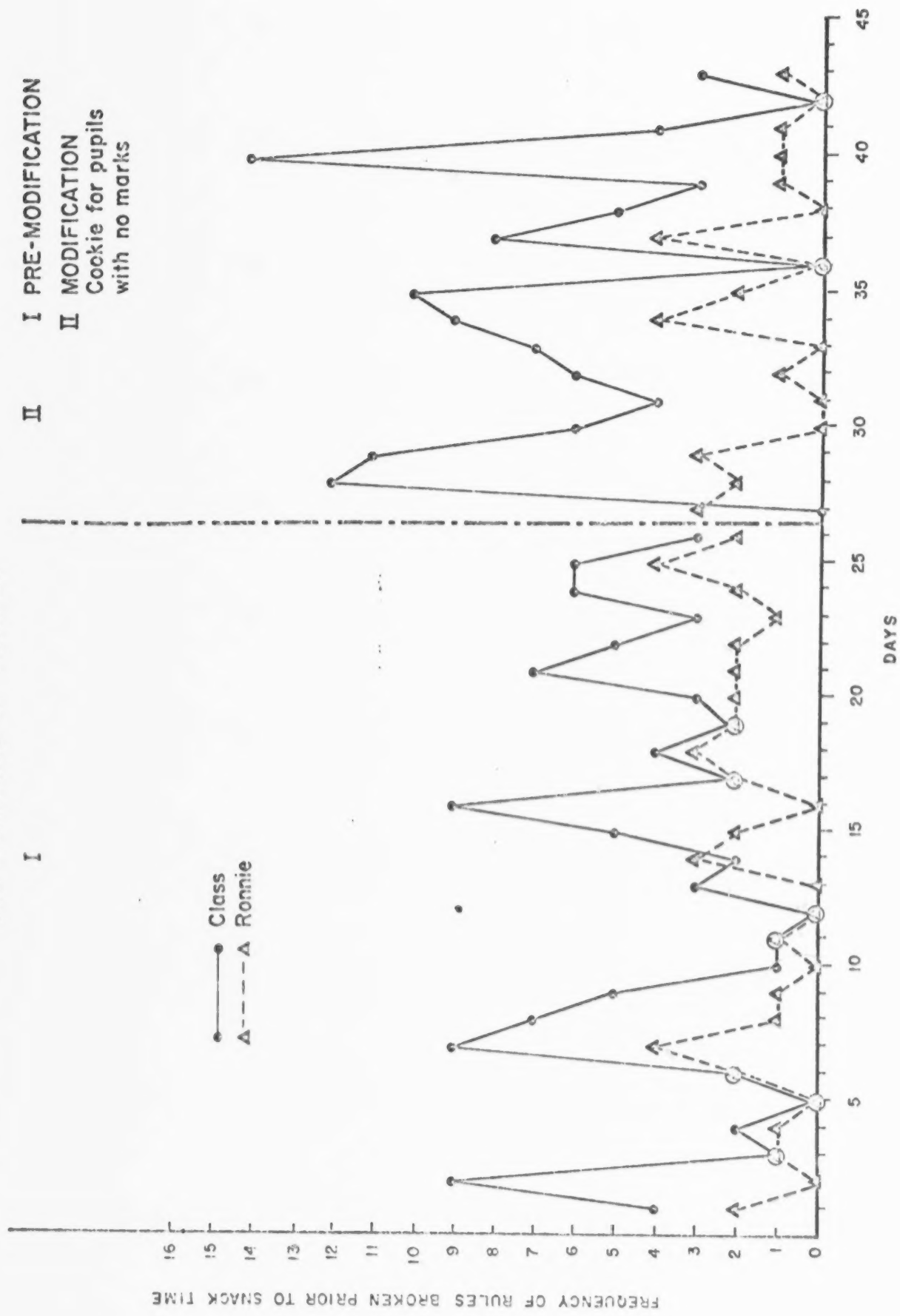
GRAPH A-20

MODIFICATION OF RULE-BREAKING BEHAVIOR
OF A GROUP (10) VS. TWO STUDENTS



GRAPH A-21

MODIFICATION OF RULE-BREAKING BEHAVIOR IN CLASS OF 12 AND ONE INDIVIDUAL BY TEACHER



broken no rules prior to snack time. The group mean was 6.0 and Ronnie's was 1.4. This contingency did not produce the desired change in behavior.

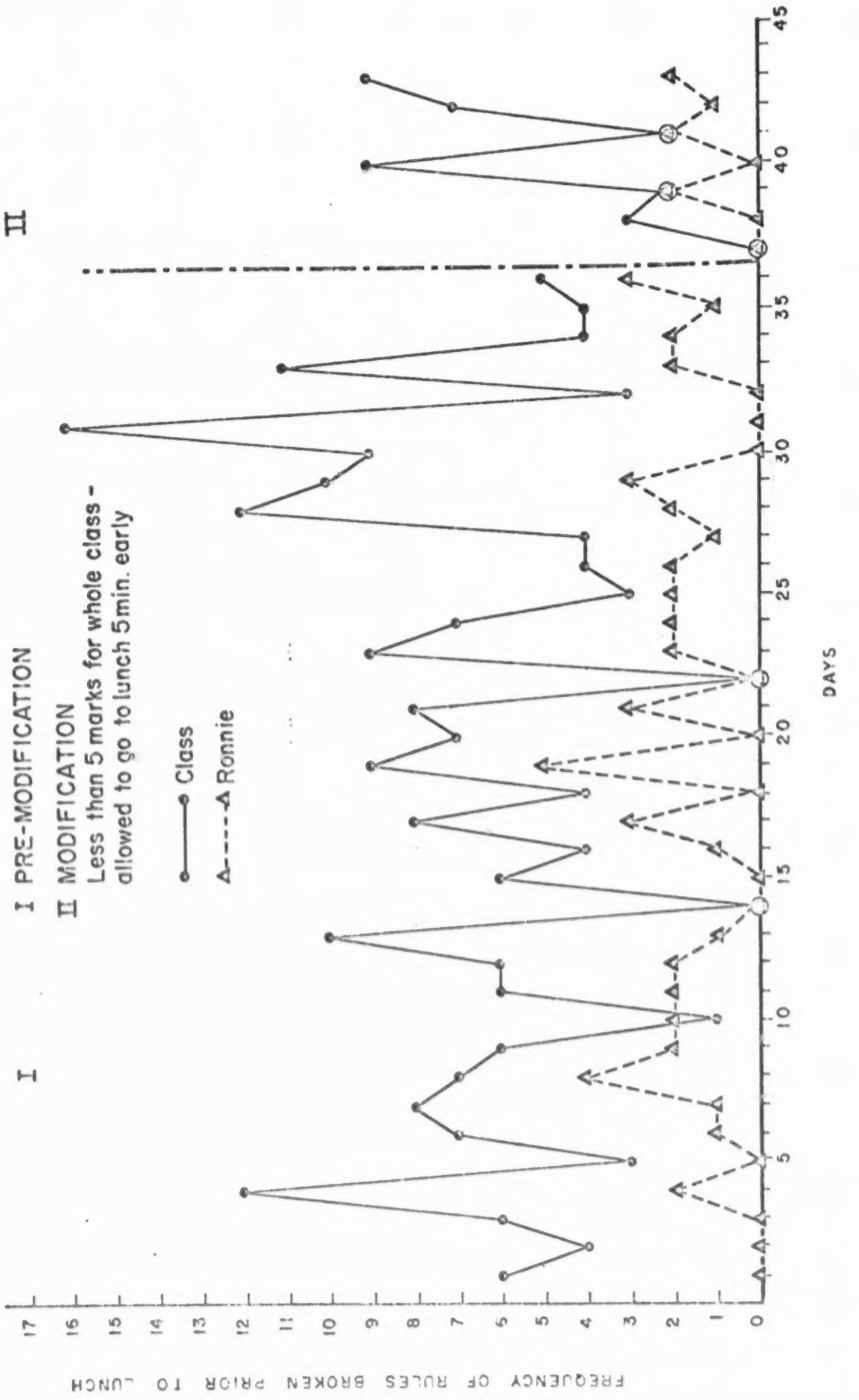
Graph A-22. This graph indicates the frequency of rules broken prior to lunch. During pre-modification (I) the group mean was 6.4 and Ronnie's was 1.4. The modification consisted of telling the class that if there were less than five rules broken by the entire group, they could go to lunch five minutes early. The group mean decreased to 4.6 and Ronnie's to 1.0 (II). No post-modification data were available.

Graph A-23. Graph A-23 indicates the number of rules that were broken during lunch and prior to physical education. During the pre-modification phase (I) the group mean was 1.2 and Ronnie's was .3. Modification consisted of allowing the group to go to physical education five minutes early if they had no more than two marks for the third time period. The mean number of rules broken by the group was .7 and none were broken by Ronnie.

Graph A-24. The data collected during pre-modification (I) consisted of the teacher counting the number of times during a five day week that the pupil did not complete his homework. The student did not complete his homework four out of five days. The teacher had observed that he enjoyed art and allowed the student to earn extra time for drawing each day that he completed his homework (II_1). After the contingency was in effect five weeks,

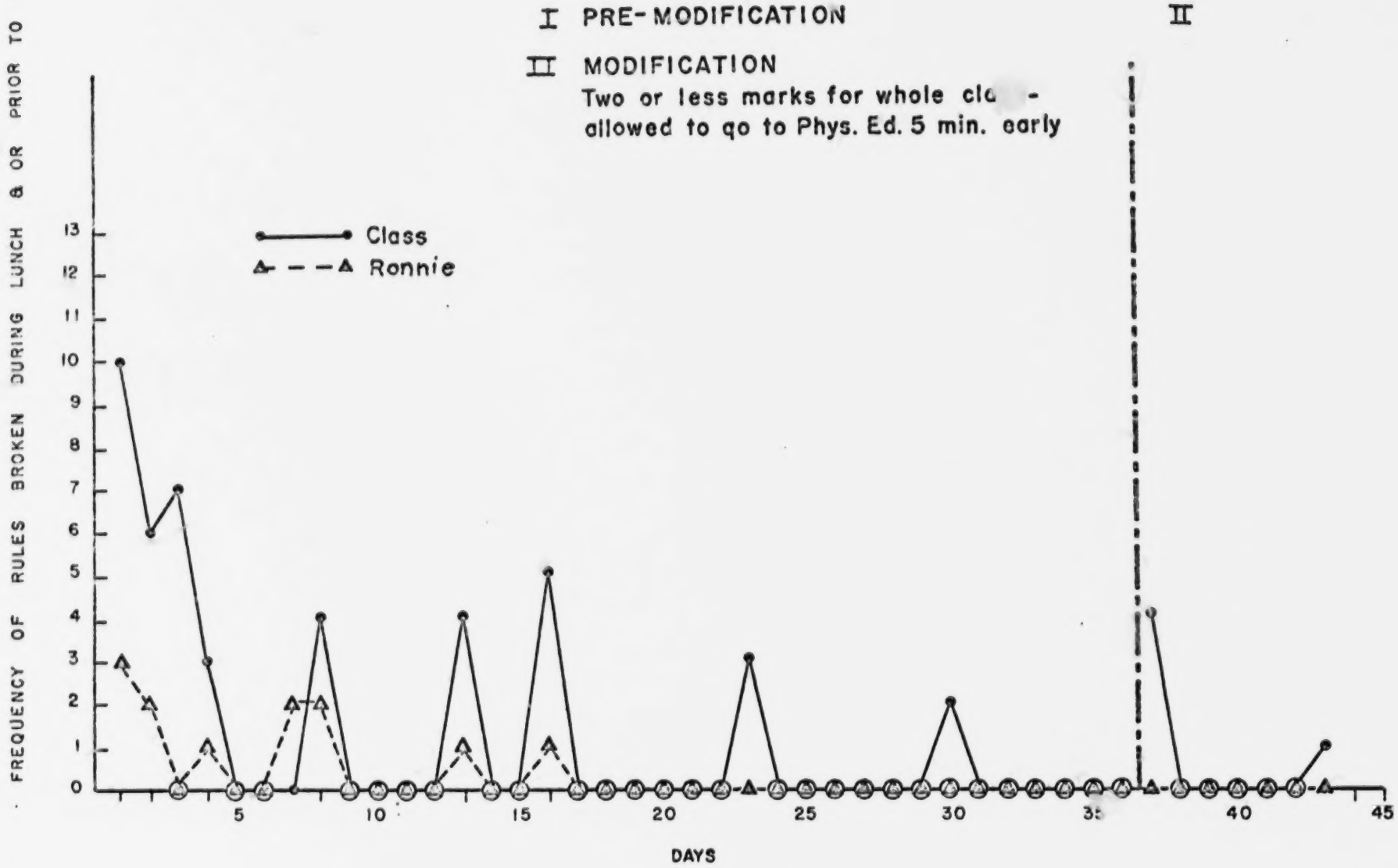
GRAPH A-22

MODIFICATION OF RULE-BREAKING BEHAVIOR IN CLASS (12)
AND ONE INDIVIDUAL BY TEACHER



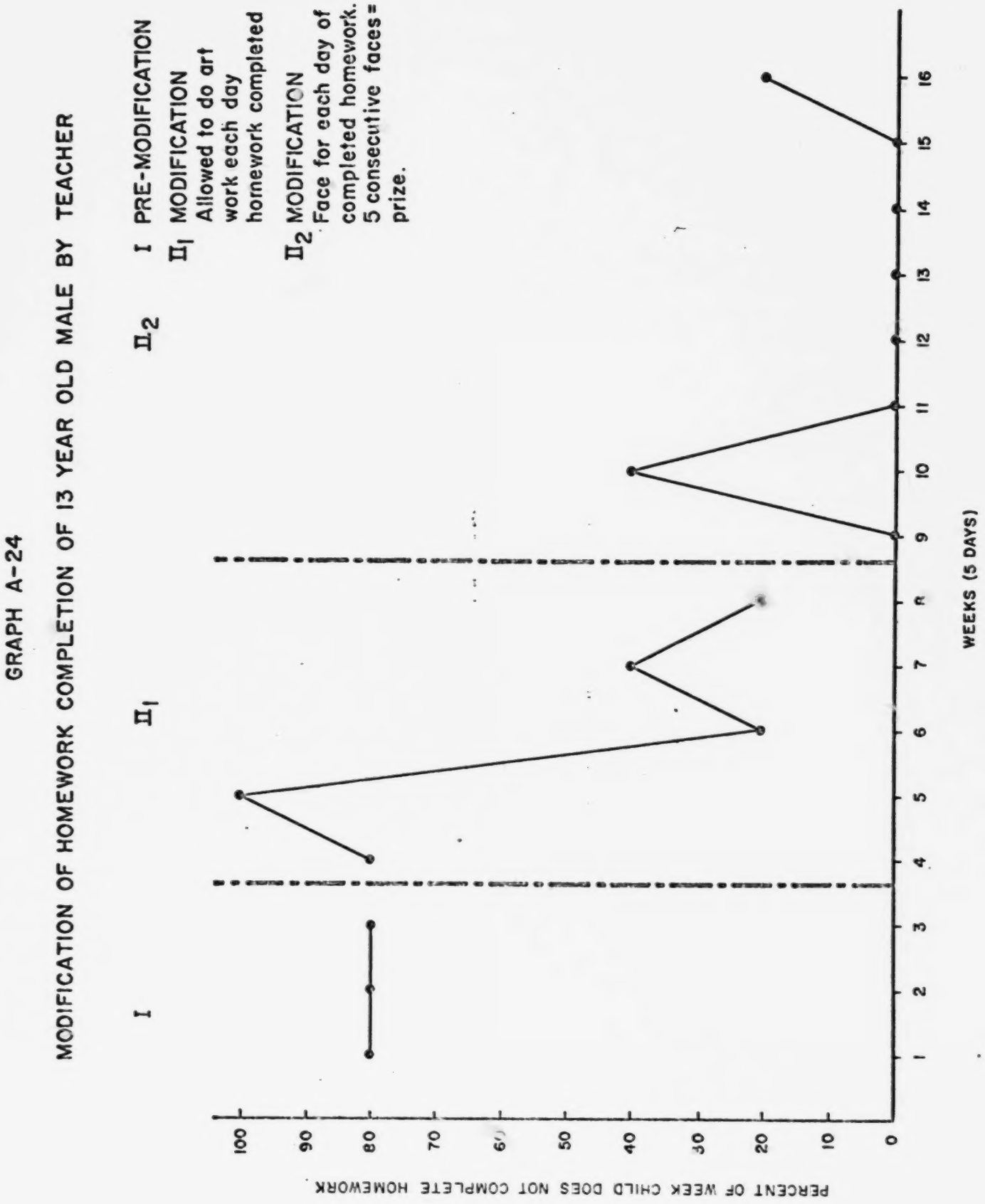
GRAPH A-23

MODIFICATION OF RULE-BREAKING BEHAVIOR IN CLASS OF 12 AND ONE INDIVIDUAL, BY TEACHER



GRAPH A-24

MODIFICATION OF HOMEWORK COMPLETION OF 13 YEAR OLD MALE BY TEACHER



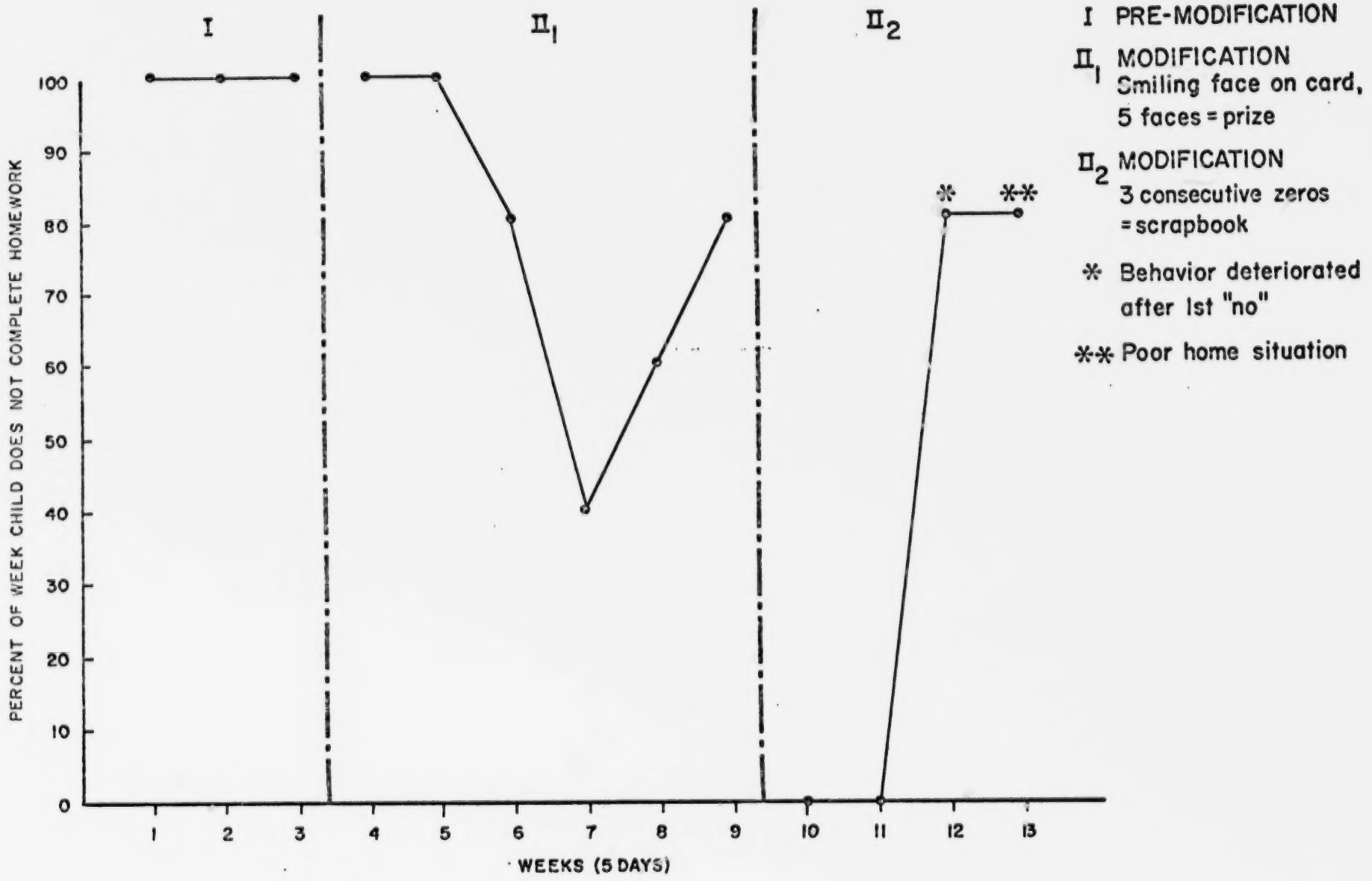
Modification II_2 was instituted. For eight weeks the student received a "smiling" face on every completed homework paper and after earning five consecutive faces he was awarded a prize which occurred at point 15 on the graph. The means for the pre-modification phase was 80%, for the first modification 52% and for the second modification 7.5%.

Graph A-25. Another teenage boy in the exceptional child program never completed his homework. Smiling Faces were put on a card every time he completed his homework and when he earned five faces he was given a prize (II_1). However, this boy never completed his homework for an entire week. Next, the student told the teacher he wanted a scrapbook. As can be seen from the graph, homework was completed for two consecutive weeks, but once a "no" was recorded the behavior deteriorated.

Graph A-26. The data presented in this graph for the pre-modification phase (I) indicate a range of zero to nine times per day that the child did not follow the directions given by the teacher. The modification (II) consisted of showing the graph to the child and telling him that he would be given a piece of candy if the data point was zero. Unfortunately, the data plotted were never zero during the modification phase (II). The mean frequency of "not following directions" during pre-modification was 3.5 in contrast to a mean of 2.0 during modification.

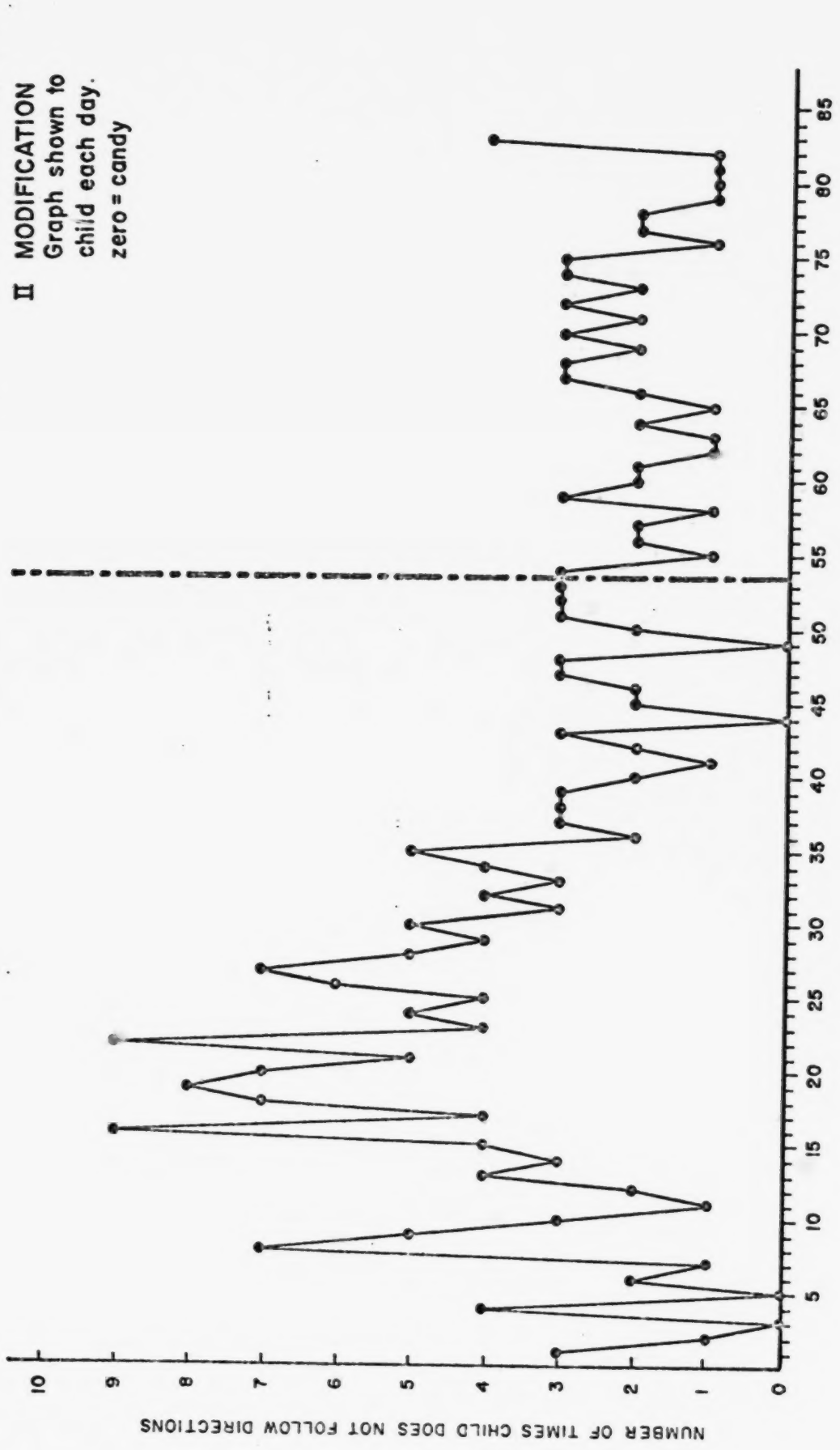
GRAPH A-25

MODIFICATION OF HOMEWORK COMPLETION OF 13 YEAR OLD MALE BY TEACHER



GRAPH A-26

MODIFICATION OF FOLLOWING DIRECTIONS OF 13 YEAR OLD MALE BY TEACHER



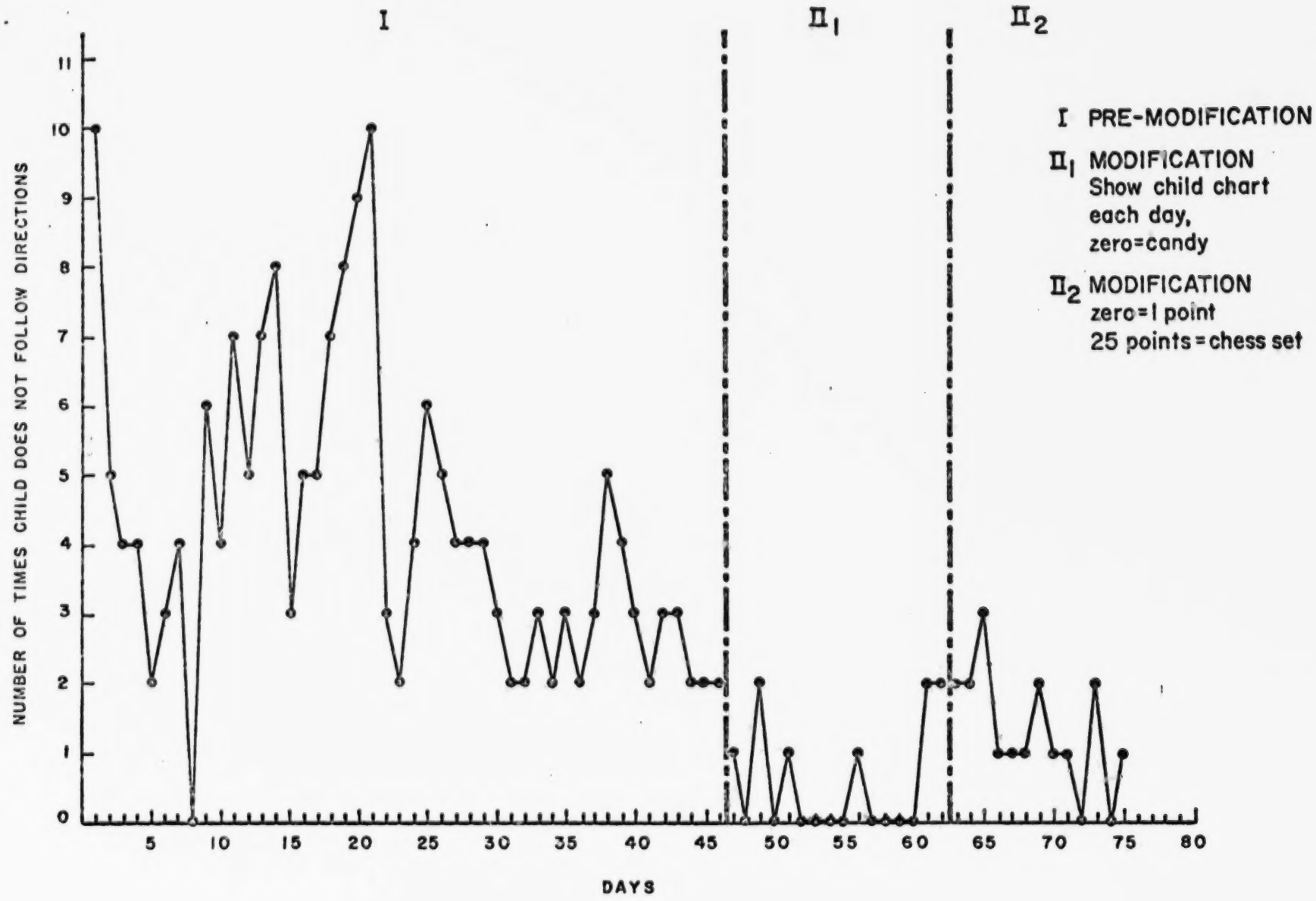
Graph A-27. The same independent and dependent variables were utilized for this graph as for Graph A-26. The mean for the pre-modification (I) data was 4.2. Modification II was showing the child his graph and each day the plotted point was zero, a piece of candy was given to him. The mean number of times the student did not follow directions was .6. The teacher indicated at this point that the student did not "like" candy, so another modification (II_2) was attempted. Every time the plotted point was zero, a point was earned and 25 points would earn a chess set. The mean for this phase was 1.3.

Graph A-28. A third modification using the number of times a student did not follow directions was attempted. The mean for the first 37 sessions was 4.9. The modification (II) was showing the graph to the student and making teacher praise contingent on "low" (one or zero) points on the graph. The mean for sessions 38 through 82 was 1.3. The post-modification (III) condition was identical to the pre-modification condition, i.e., child not shown graph and no teacher praise. The mean for sessions 83 through 86 was .6.

Graph A-29. The dependent variable was the rate of a boy talking without permission in class. The range is of the rate from zero to .80. The mean rate for the pre-modification (I) sessions was .31. The teacher made passing out folders in class contingent on a decrease in rate of talking out in class. During this period of time the boy saw another student sent to the office for a spanking. The

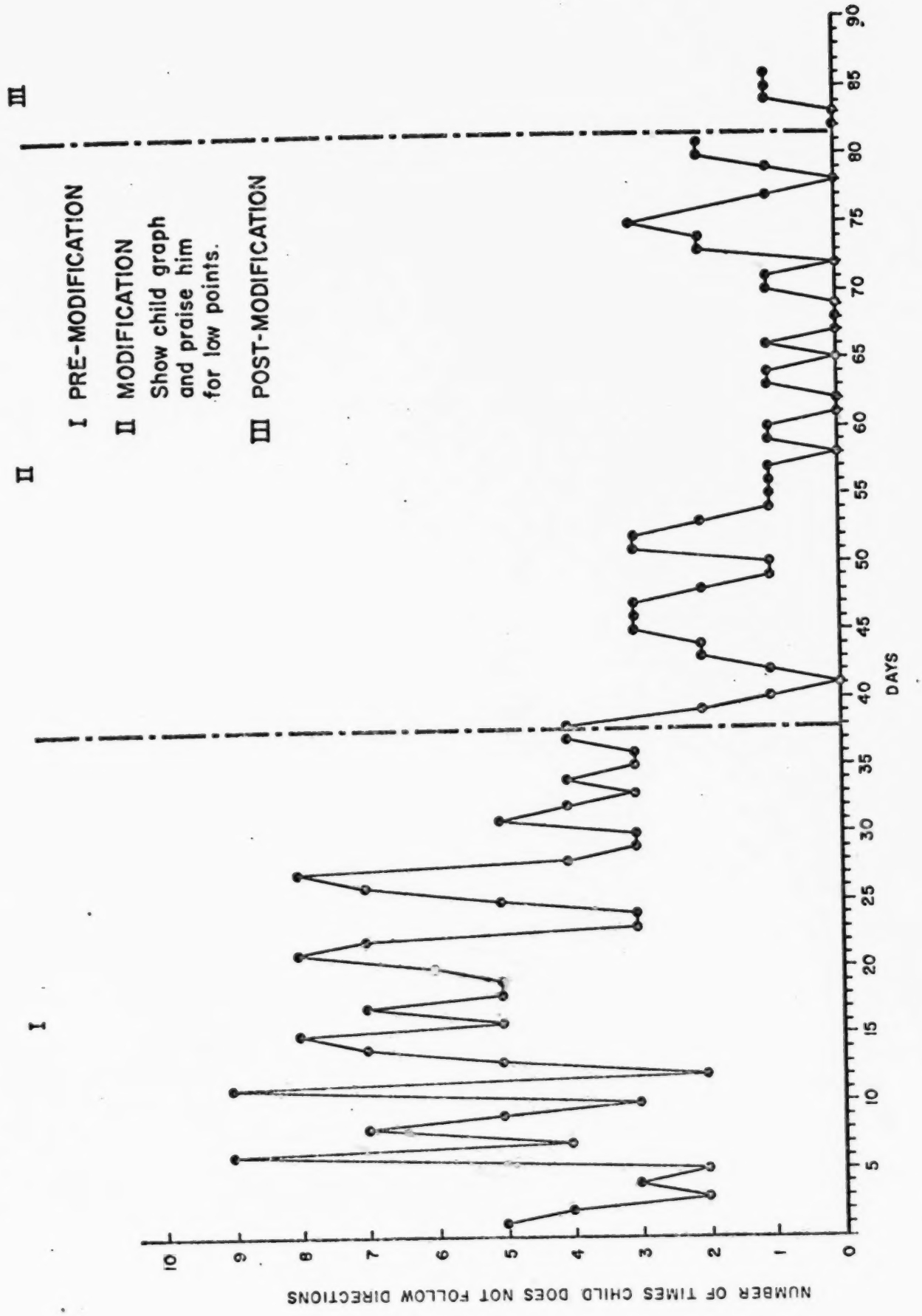
GRAPH A-27

MODIFICATION OF FOLLOWING DIRECTIONS IN 13 YEAR OLD MALE BY TEACHER



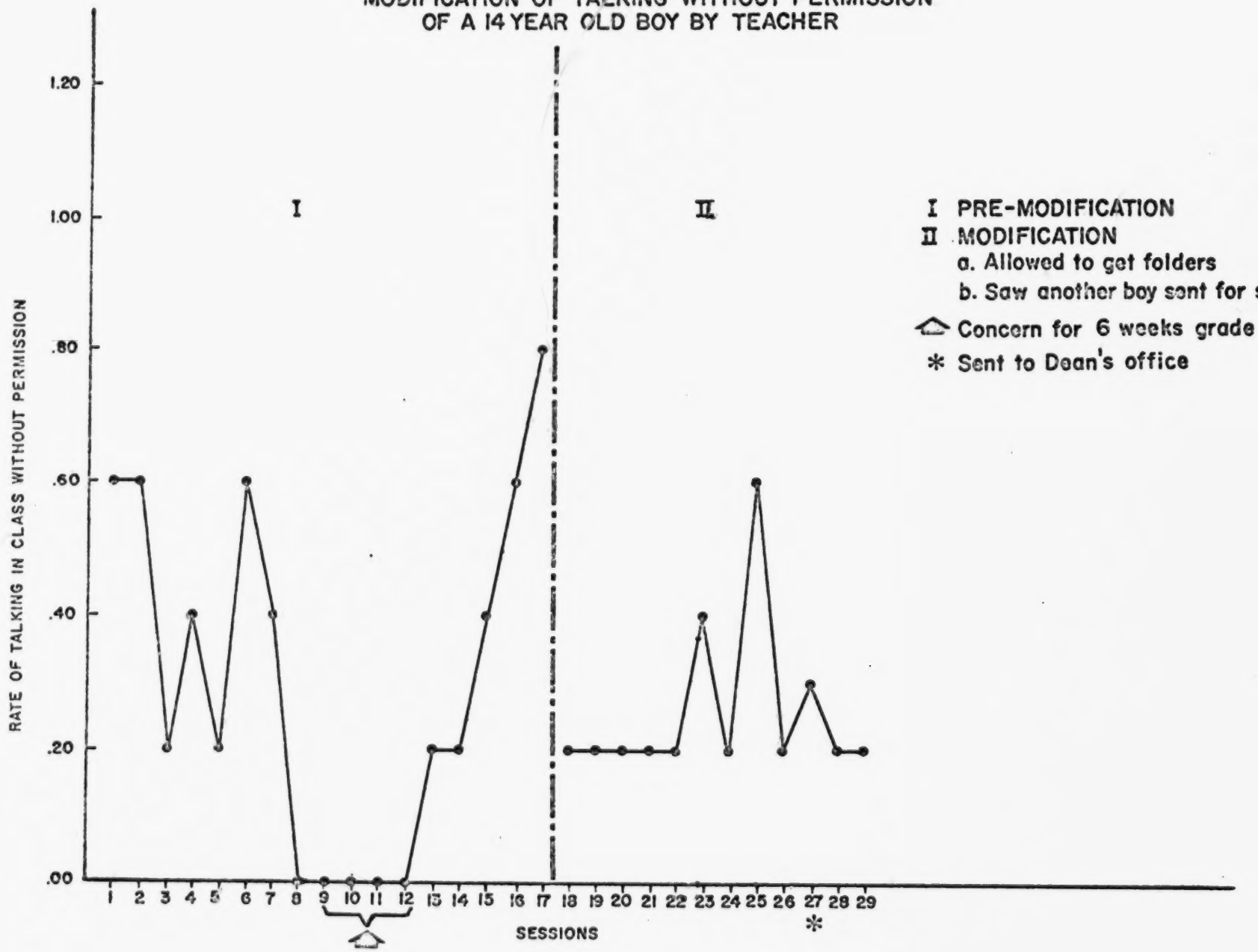
GRAPH A-28

MODIFICATION OF FOLLOWING DIRECTIONS IN 12 YEAR OLD MALE BY TEACHER



GRAPH A-29

MODIFICATION OF TALKING WITHOUT PERMISSION
OF A 14 YEAR OLD BOY BY TEACHER



mean rate for sessions 18 through 29 was .26. No post-modification data were collected.

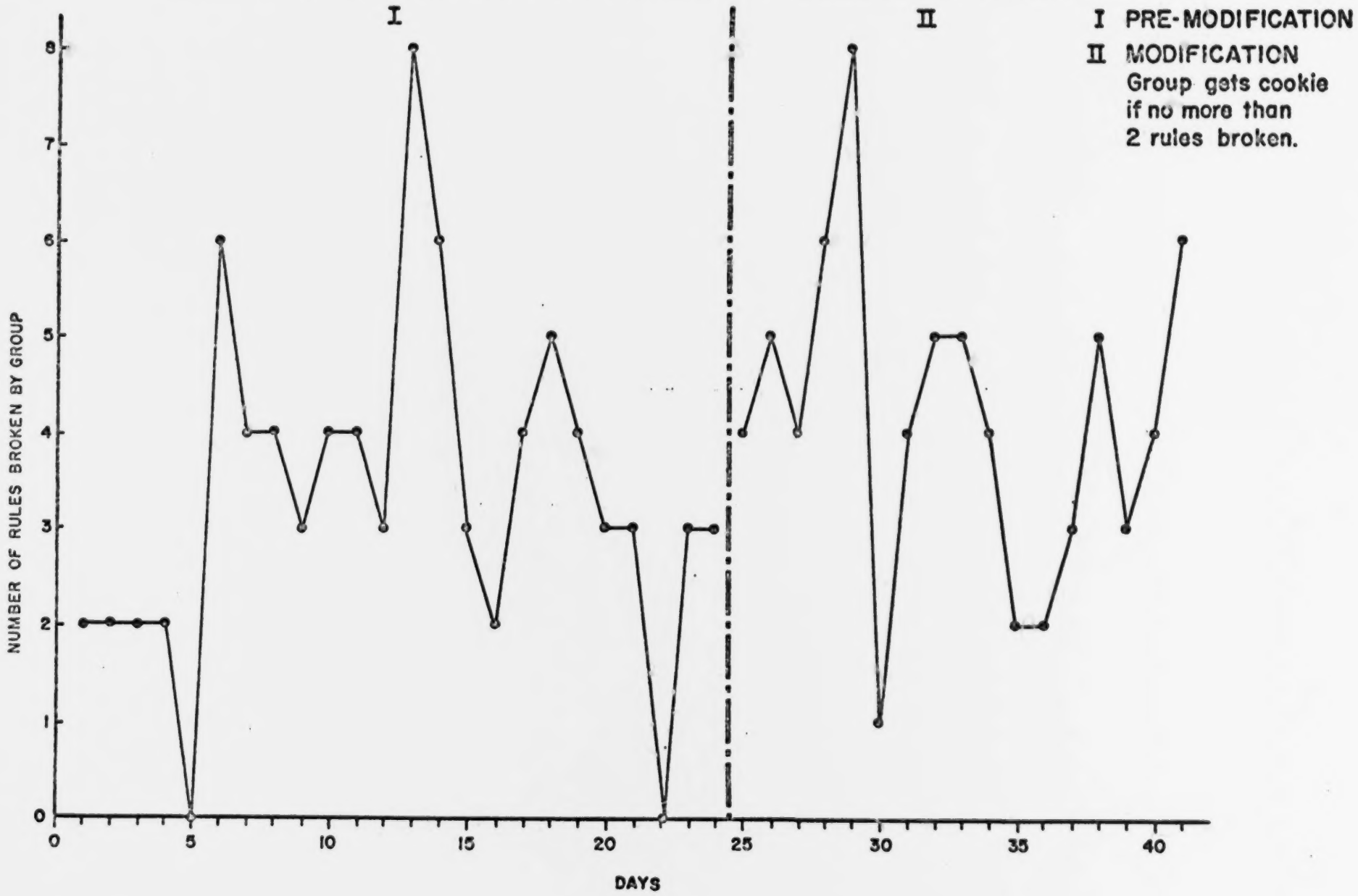
Graph A-30. The number of rules broken by a group of 29 first graders is depicted in this graph. The rules were: (1) line up properly and (2) do not disrupt during the two quiet periods. The mean of the pre-modification (I) data was 3.3. Beginning with day 25, a cookie was given to the entire group if no more than two rules were broken. The mean of the modification (II) data was 4.2. Thus, more rules were broken during the modification condition than during the pre-modification condition.

Graph B-1. One of the mothers in the parents' group has a son, age 6, who attends first grade. The mother stated that although her son knows how to ride his bicycle, and their home is close to the school, he would not ride his bike to school by himself. The boy insisted his mother ride with him, thus, each morning she rode with him all the way to school. However, the child rode home by himself every afternoon with no difficulty. According to the boy's mother, this particular behavior had been occurring every day since the beginning of school. The mother was given a data sheet and asked to record the percentage of times out of five days that he rode his bike to school without her.

The pre-modification phase (I) indicated that the child did not ride to school without his mother at all for two weeks. Subsequently, it was found that an older girl across the street rode her bike to school each day. The mother asked the girl to ride with her son.

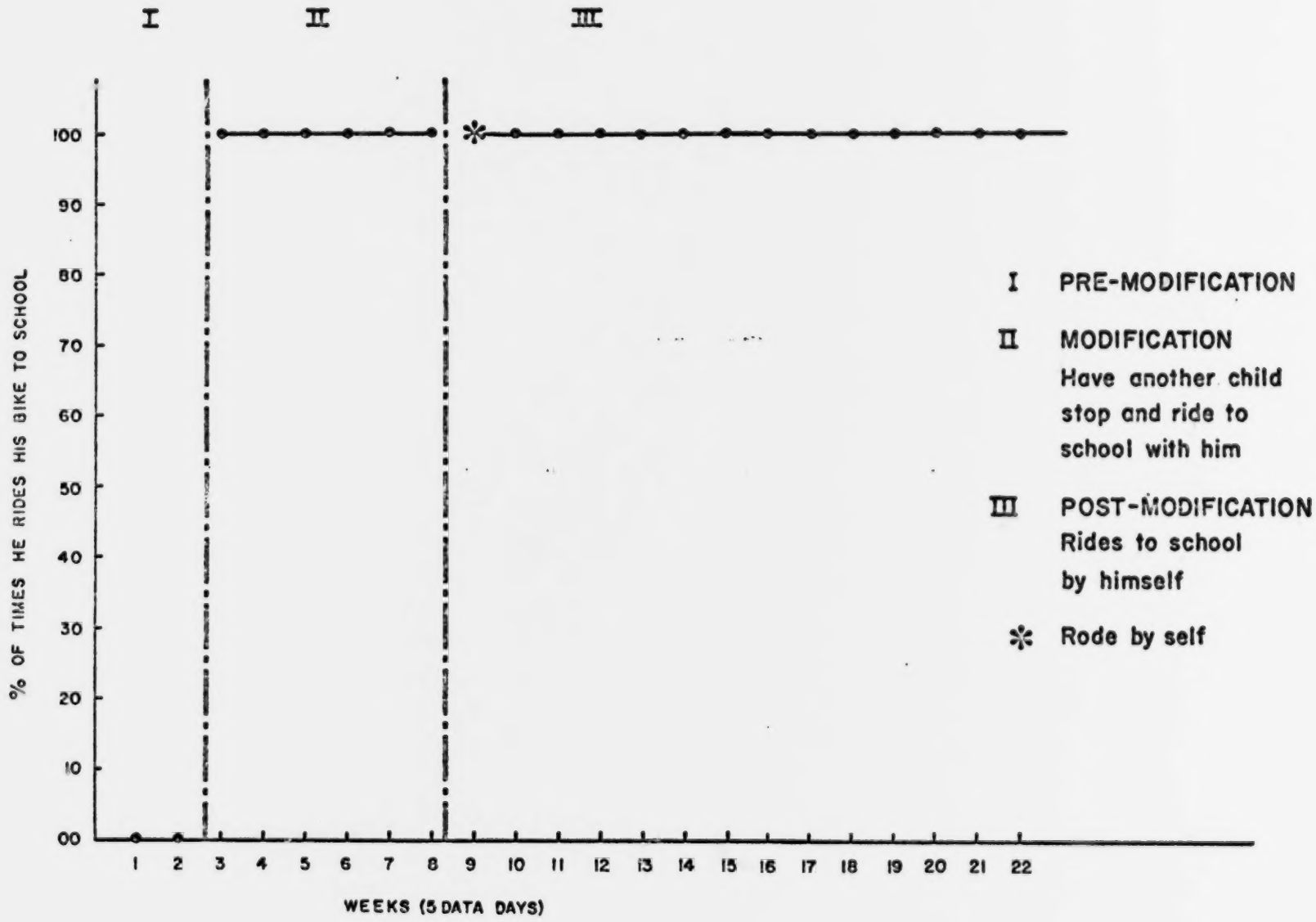
GRAPH A-30

MODIFICATION OF RULE-BREAKING BEHAVIOR OF 1st GRADE (29) BY TEACHER



GRAPH B-1

MODIFICATION OF BIKE-RIDING BEHAVIOR OF 6 YEAR OLD MALE BY MOTHER



During the ninth week, the girl began riding with another girl and the son continued to ride to school by himself. He has now been riding to school by himself for 14 weeks.

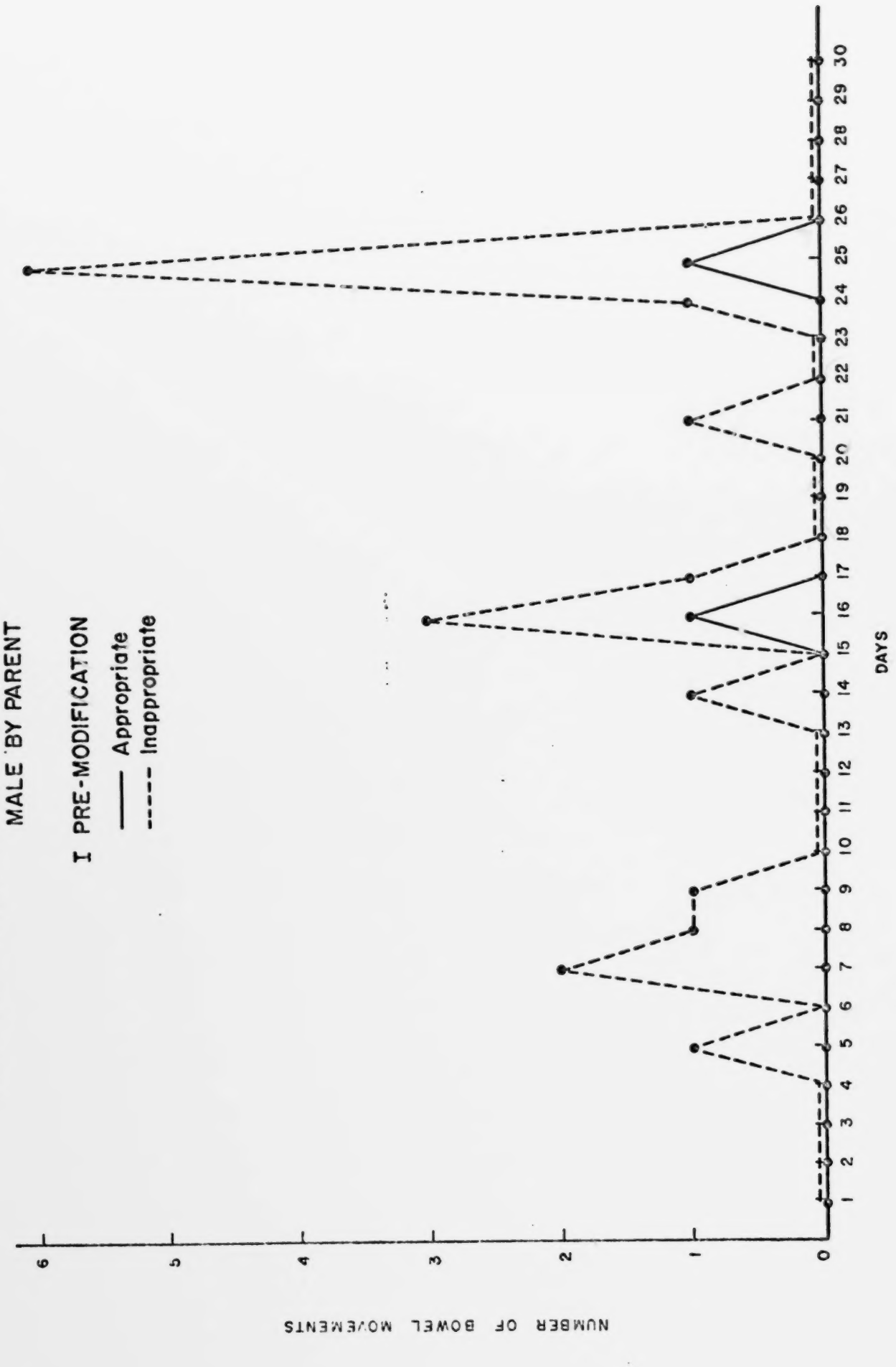
Graph B-2. A three year old boy had a chronic constipation problem. The mother counted the number of appropriate versus inappropriate bowel movements. The consultants indicated to the mother that she should make a reward contingent on any bowel movement which was even close to appropriate. The child typically sat in a corner when he defecated. The parent stated that the child liked coke. On days 16 and 25 he made appropriate bowel movements but the parent did not reward him. The mean number of appropriate bowel movements was .1 and the mean of the inappropriate bowel movements was .6.

Graph B-3. This graph is concerned with the modification of eating behavior of a four year old child. The child would either not eat or only partially complete her lunch or dinner meal. It was decided that the data would be collected in five-day units. Data were only collected for lunch and dinner, thus yielding a possible frequency of ten in a week. The mean for the pre-modification (I) data was 3.5.

The modification (II) consisted of the mother placing a star on a chart each time the child completely ate her lunch or dinner. The child was also told that if she completed both her lunch and dinner for five consecutive days, she would receive a baton. As is indicated from the data on the graph, the child received the baton at point 17.

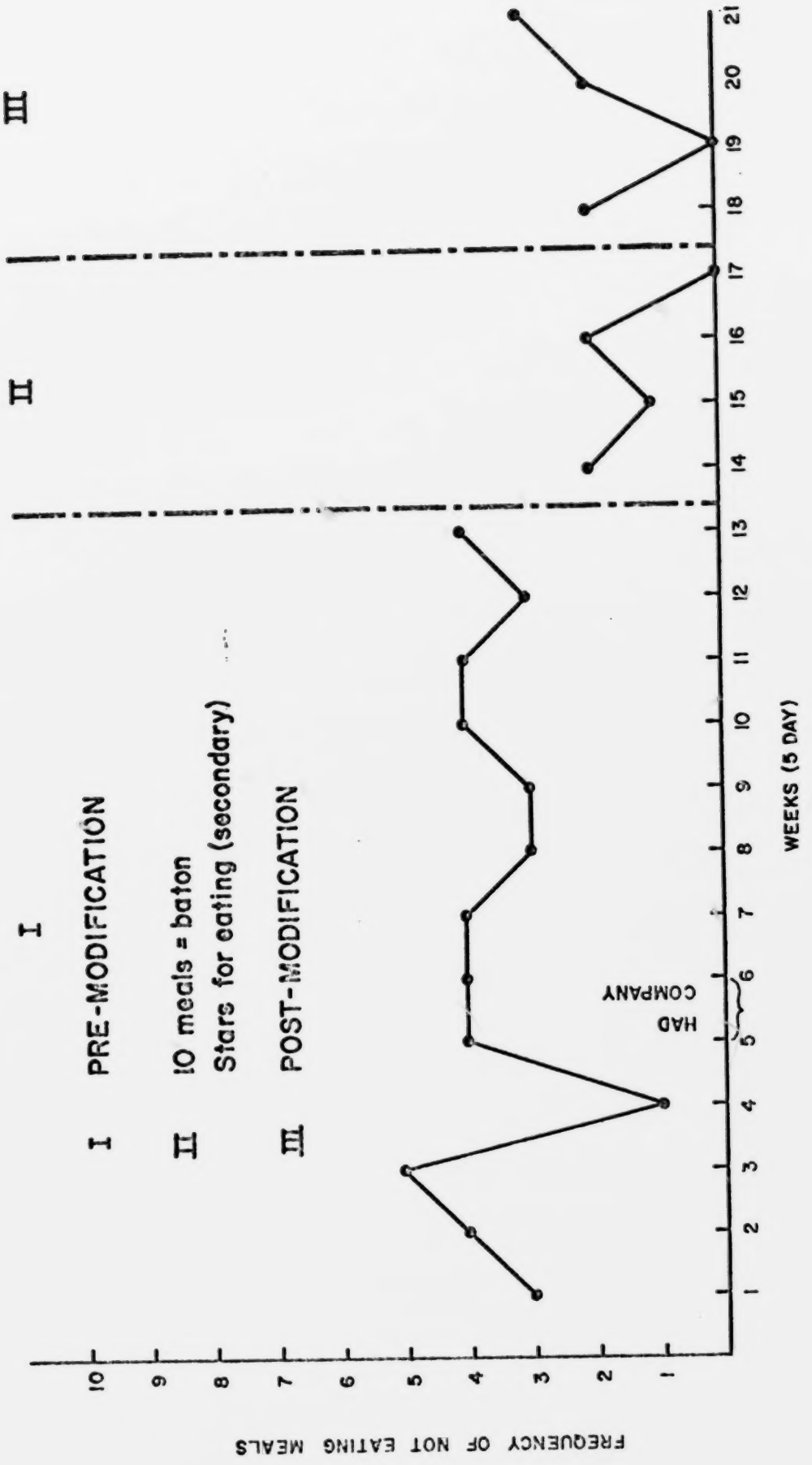
GRAPH B-2

PRE-MODIFICATION DATA ON CONSTIPATION PROBLEM IN A 3 YR OLD MALE BY PARENT



GRAPH B-3

MODIFICATION OF EATING BEHAVIOR
OF A 4 YR OLD GIRL BY MOTHER


I
II
III
I PRE-MODIFICATION
II 10 meals = baton
Stars for eating (secondary)
III POST-MODIFICATION
HAD COMPANY
FREQUENCY OF NOT EATING MEALS
WEEKS (5 DAY)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
1 2 3 4 5 6 7 8 9 10

The mean for the modification data was 1.2. The mother did not promise the child any other prize. She continued to record the frequency of not eating meals, and the mean was 1.8. (Post-modification III).

Graph B-4. Graph B-4 illustrates an attempted modification of bed-wetting behavior. The subject was a 4½ year old child who had wet the bed every night for years. The mother counted the percentage of times out of five-day periods that the child wet the bed.

The pre-modification (I) data indicated that the child wet the bed for ten consecutive days. During this time the mother set an alarm clock for herself each night so she could take the child to the bathroom, but the child wet the bed anyway.

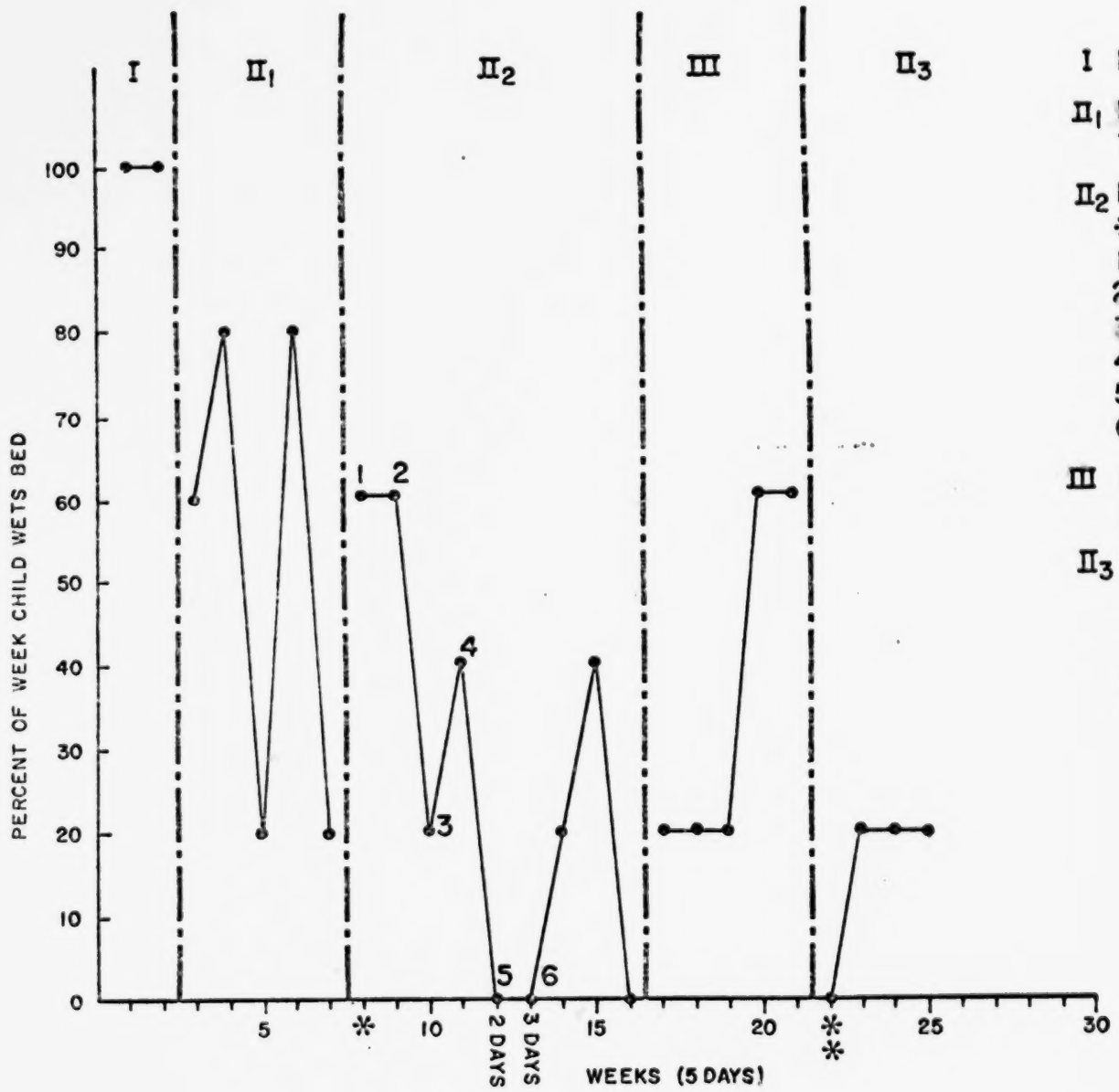
Unfortunately, the mother, as can be seen from the graph, changed from one contingency to another without, in the consultants' view, giving the contingency a good try.

The first modification (II_1) consisted of the parent telling the child that she would receive a prize if she remained dry for seven consecutive nights. The child did not reach the criterion. This contingency was in effect for 25 days. The mother next told the child she would receive 2¢ each day she did not wet the bed and got up by herself and went to the bathroom (II_2). This contingency was in effect for five days. Next, the child was given a prize every day if she got up and went to the bathroom by herself.

At three, the mother bought a nightgown for the child and told

GRAPH B-4

MODIFICATION OF BEDWETTING BEHAVIOR OF 4 1/2 YEAR OLD FEMALE BY PARENT



I PRE-MODIFICATION

II_1 MODIFICATION
7 days dry = prize

II_2 MODIFICATION
* Gets up by herself
1. 2¢ to get up by herself
2. prize
3. nightgown
4. stars and faces
5. necklace
6. stars and faces

III POST-MODIFICATION
No stars or faces

II_3 MODIFICATION
** Child gets up before parents go to bed-not during night

Stars and faces – 5 consecutive stars = record

her that any night she did not wet the bed, she could wear the nightgown the following night. During this contingency, the child wet the bed two nights out of five nights, and at this point she began to get up by herself.

At four, the mother placed a star on a chart if the child did not wet the bed, and a frowning face if she did.

At point five, the mother gave the child a necklace after two nights in which the child did not wet the bed.

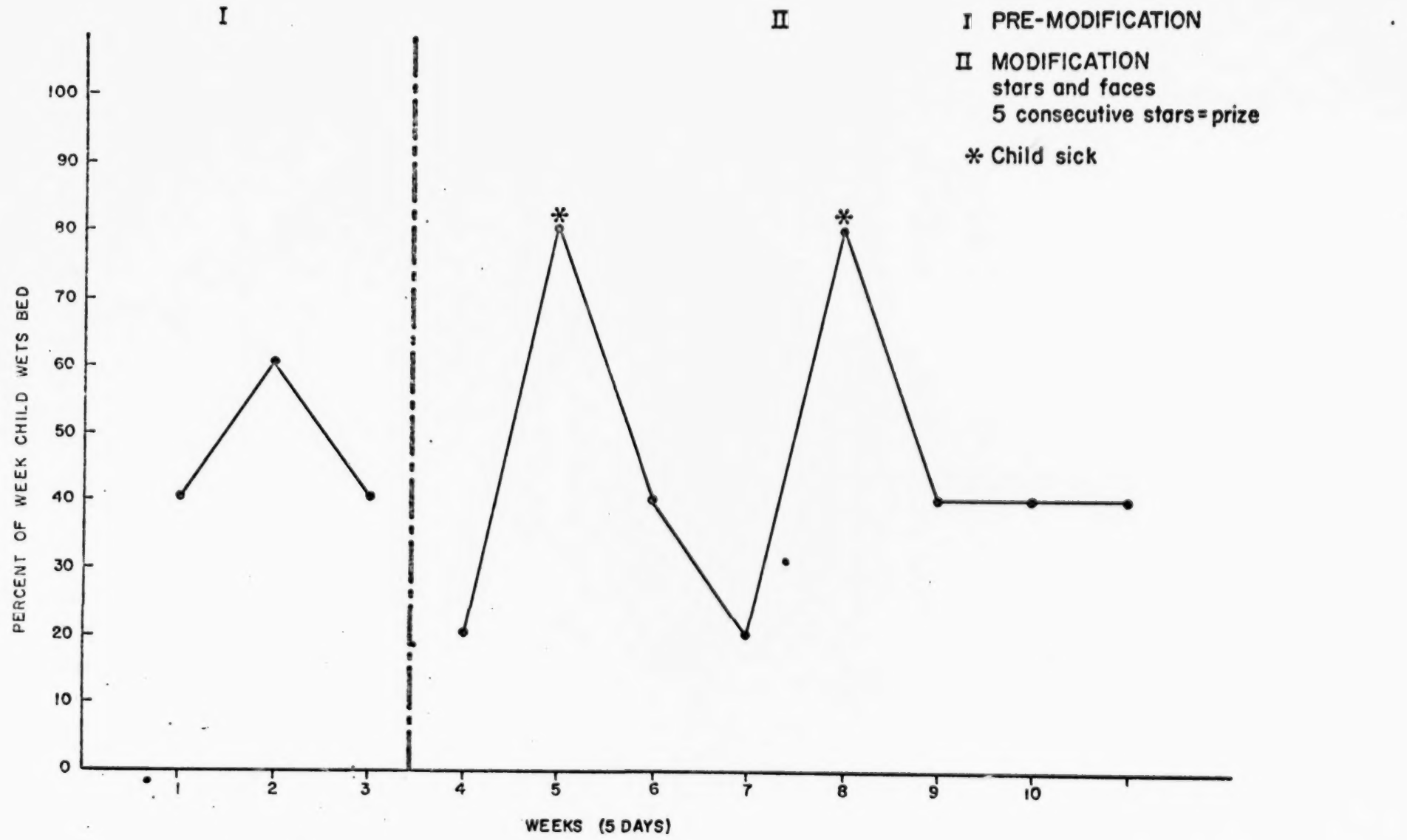
At point six, the mother again gave the child stars or frowning faces contingent upon bedwetting. This contingency was in effect for 20 data days. Next, the mother continued to count the percentage of bedwetting behavior, but did not give the child either stars or faces. At Modification II_3 the mother re-introduced stars and faces and stated that five consecutive stars would be worth a record.

Graph B-5, B-6. One of the mothers had a 3½ year old boy who both wet the bed and bit his fingernails. The mean for the pre-modification data (I) for bedwetting was 46.7% and for nailbiting was 2.0. A modification contingency was applied only to the bedwetting behavior. The mother gave the child a star on a chart every day he did not wet the bed and a frowning face if he did. Five consecutive stars would result in a prize. The mean for the modification (II) data was 45%. The modification did not significantly alter either the bedwetting or nailbiting behavior.

Graph B-7. Another mother was interested in eliminating the thumb-

GRAPH B-5

MODIFICATION OF BEDWETTING BEHAVIOR OF 3 1/2 YEAR OLD MALE BY PARENT

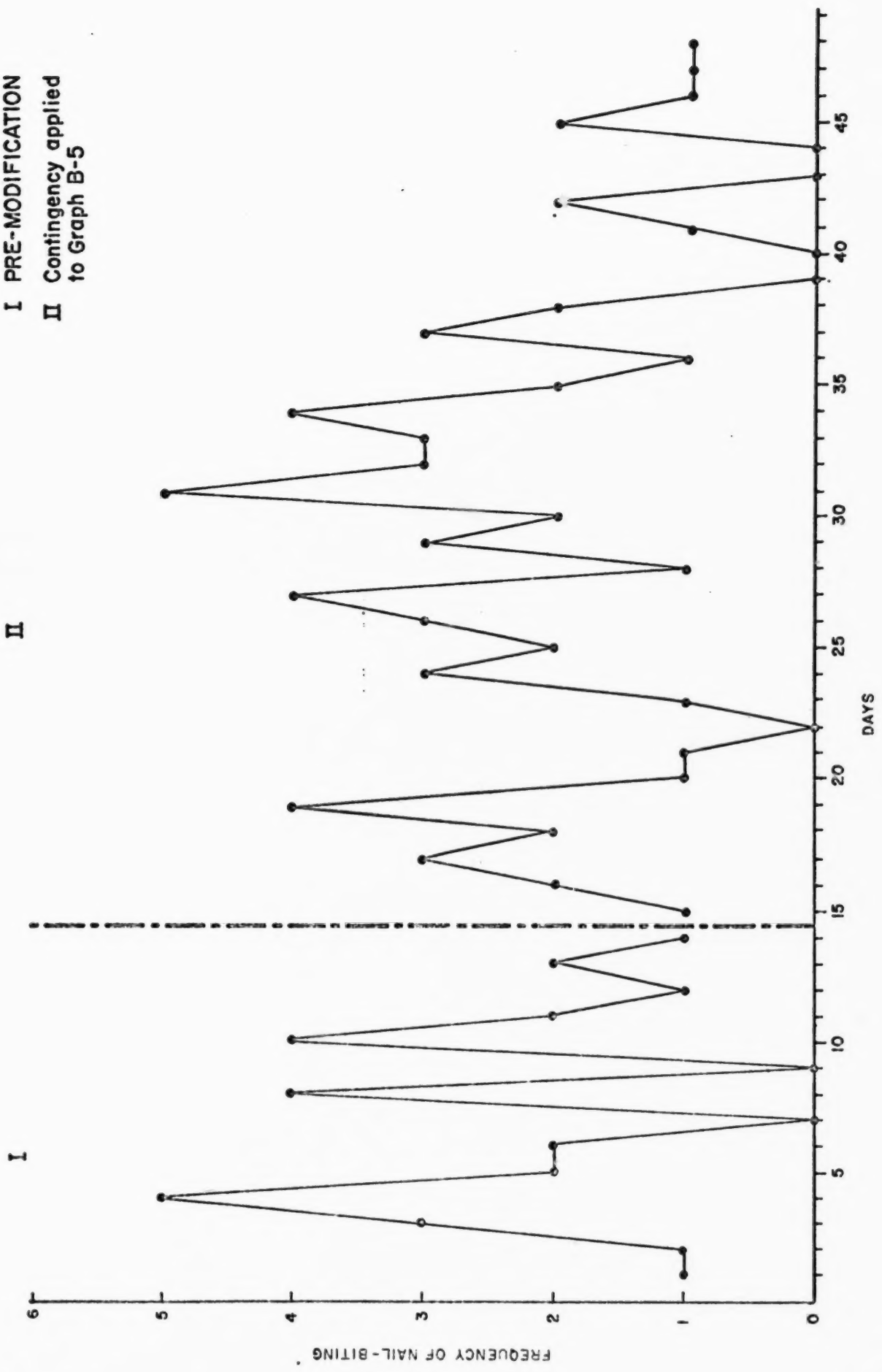


GRAPH B-6

MODIFICATION OF NAIL-BITING BEHAVIOR IN 3 1/2 YEAR OLD MALE BY PARENT

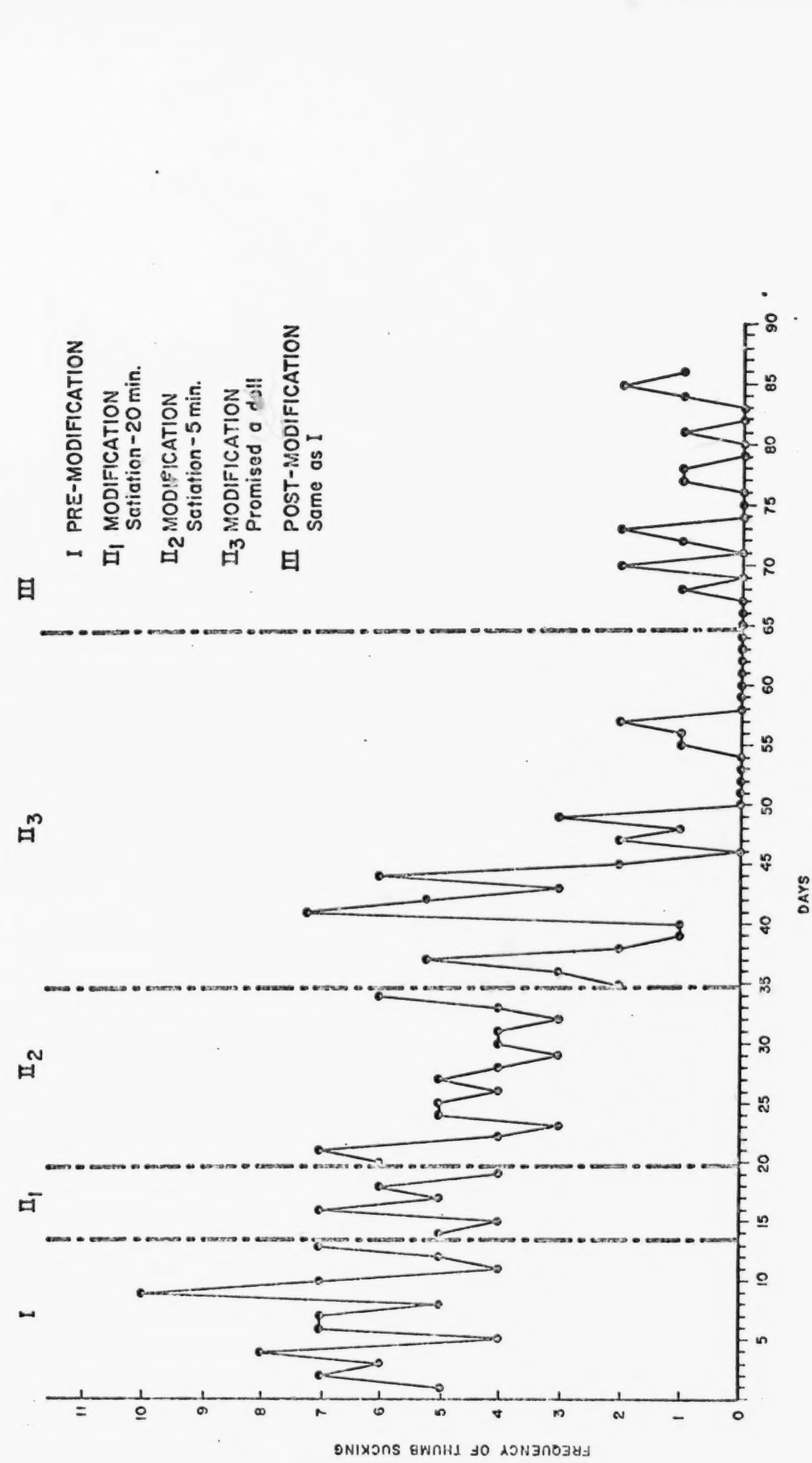
I PRE-MODIFICATION

II Contingency applied to Graph B-5



GRAPH B-7

MODIFICATION OF THUMB SUCKING BEHAVIOR OF 6 YEAR FEMALE BY PARENT



sucking behavior of her six year old daughter. The mother had often verbalized her disapproval of thumbsucking to the daughter. It had been noted that the child did not suck her thumb while at school. To collect the pre-modification (I) data, the mother counted the number of times she saw the child sucking her thumb each day.

The mother observed that once the child put her thumb in her mouth, she kept it there for a period of time. The child sucked her thumb in front of her mother with "apparent zest."

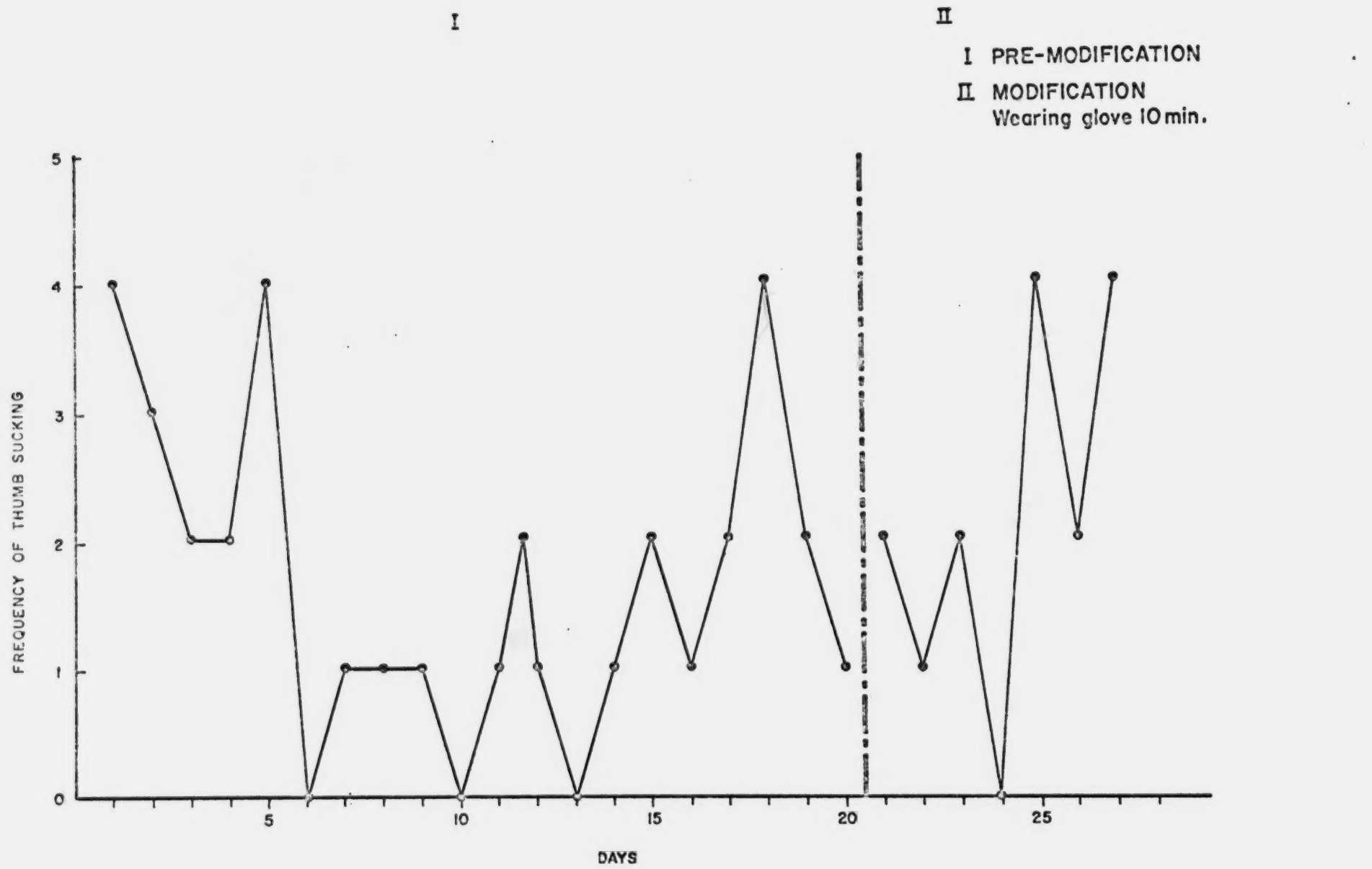
The pre-modification data were collected for 13 days. The first modification (II_1) was that when the mother saw the child thumbsucking, she was to make her keep the thumb in her mouth for 20 minutes prior to its removal. This modification did not greatly reduce the frequency of thumbsucking. Beginning on day 20, each time the mother saw the child with her thumb in her mouth, she demanded that the child continue sucking for five minutes. Although this modification had some effect on the frequency of thumbsucking, again the decrease was not great enough.

The third contingency which was applied was begun on day 35. The mother promised the child a doll if she did not suck her thumb for seven days. As can be seen, for a number of days there was great variability. The child received the doll on day 64. The mother did not promise the child any other prize but continued to count the frequency of thumbsucking.

Graph B-8. Another modification of thumbsucking was attempted by a

GRAPH B-8

MODIFICATION OF THUMB SUCKING BEHAVIOR IN 6 YEAR OLD FEMALE BY PARENT



parent. During the pre-modification phase (I) the mean frequency of thumbsucking was 1.7. The child's mother attempted to eliminate the behavior by making the child wear a glove for ten minutes each time she saw her sucking her thumb. The mean during the modification (II) was 2.1. Obviously the contingency did not bring about the desired change in behavior.

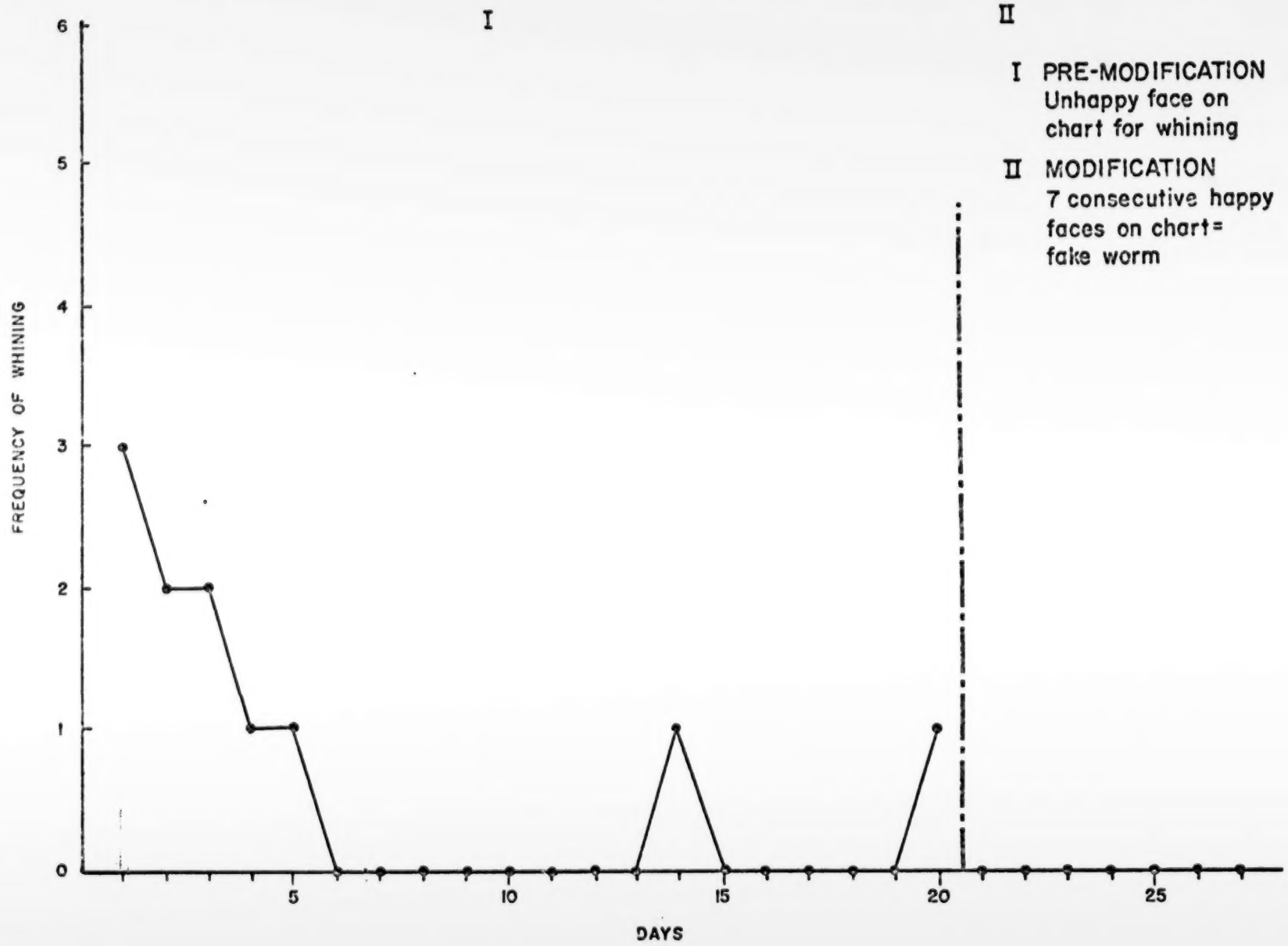
Graph B-9. Although a whining child has been a complaint of many mothers, few have attempted to eliminate the problem in a systematic manner. Graph B-9 indicates that such an approach can be effective. The range of whining behavior during pre-modification (I) was from zero to three times per day. At this time the child was receiving unhappy faces on a chart for whining. The modification (II) consisted of making seven consecutive happy faces on the chart worth a fake worm. The child earned the fake worm.

Graph B-10. One mother was having difficulty getting her five year old daughter to pick up her things around the house. For instance, if she were playing with toys she never returned them to the appropriate place. The mean frequency of not picking up her things during pre-modification (I) was .5. The modification (II) consisted of giving the child a prize for five consecutive happy faces. Happy faces were earned by picking up her toys, clothes, etc. The mean frequency during the modification phase was 0.

Graph B-11. Another parent counted the percentage of five day weeks that her son cleaned his room. The mean percentage during pre-

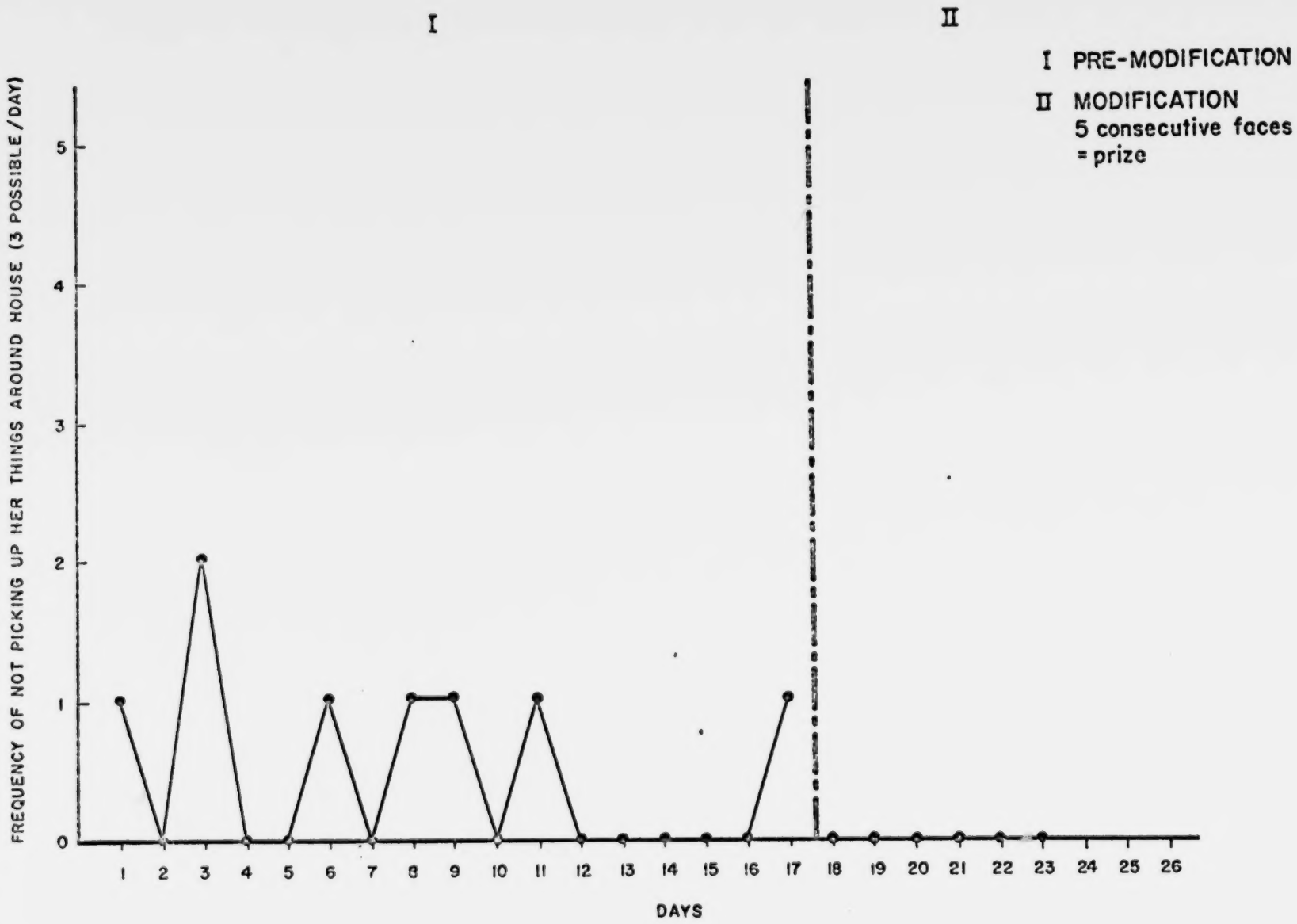
GRAPH B-9

MODIFICATION OF WHINING BEHAVIOR OF 6 YEAR OLD MALE BY PARENT



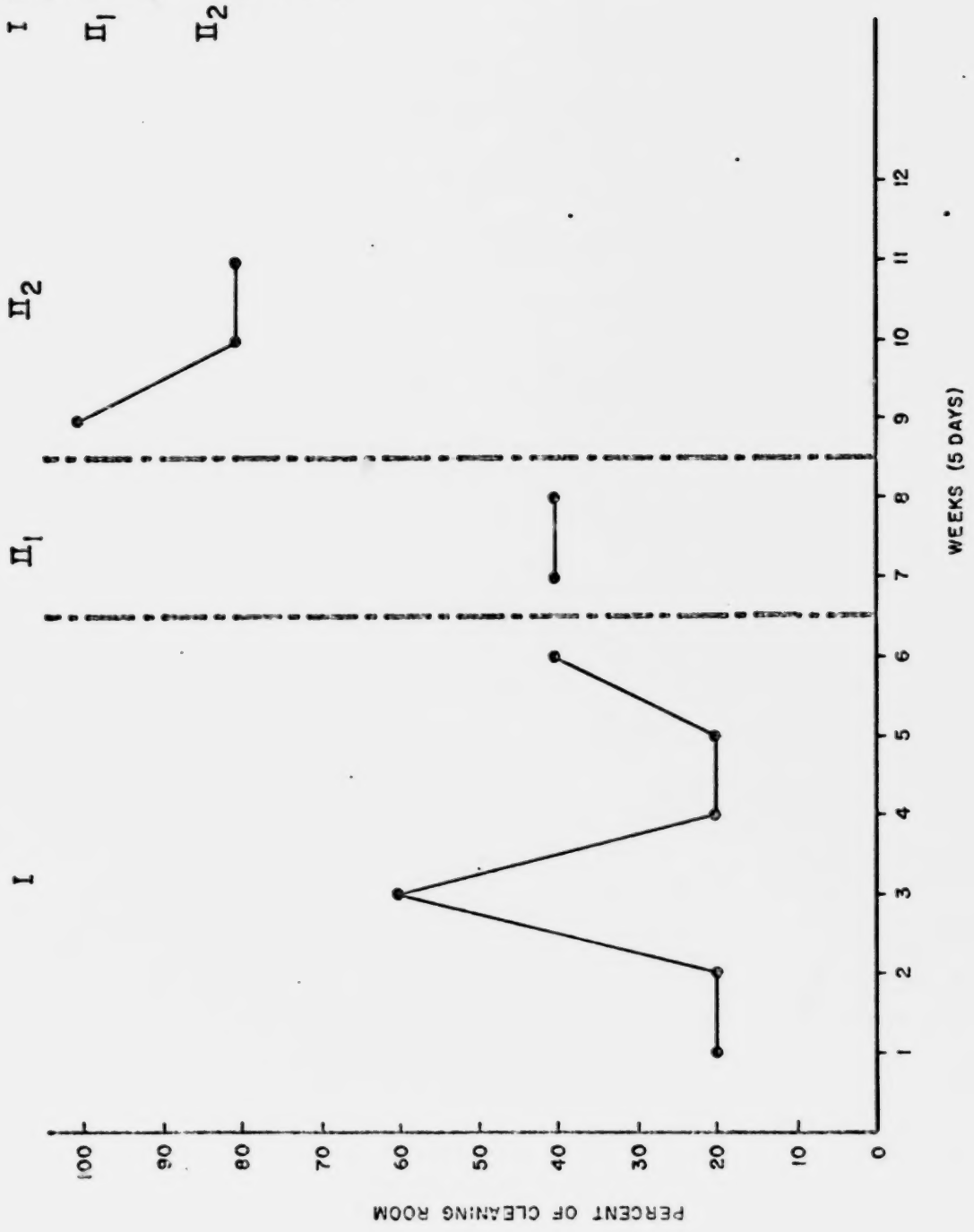
GRAPH B-10

MODIFICATION OF PICKING UP HER THINGS OF FIVE YEAR OLD FEMALE BY PARENT



GRAPH B-11

MODIFICATION OF ROOM-CLEANING BEHAVIOR IN 6 YEAR OLD MALE BY PARENT



modification (I) was 30%. A nickel per day was made contingent upon cleaning his room (II_1). The mean was 40%. Next, the child's mother added to the contingency by promising the child a record, in addition to the nickels, if he cleaned his room five consecutive days (II_2). The mean for II_2 was 86.7%

Graph C-1. This graph indicates the results of a modification of disruptive behavior in a six year old boy. The behaviors which the teacher described as disruptive to the rest of the class included: (1) being away from his desk without permission, (2) talking out of turn, and (3) playing with items in his desk while supposed to be engaged otherwise.

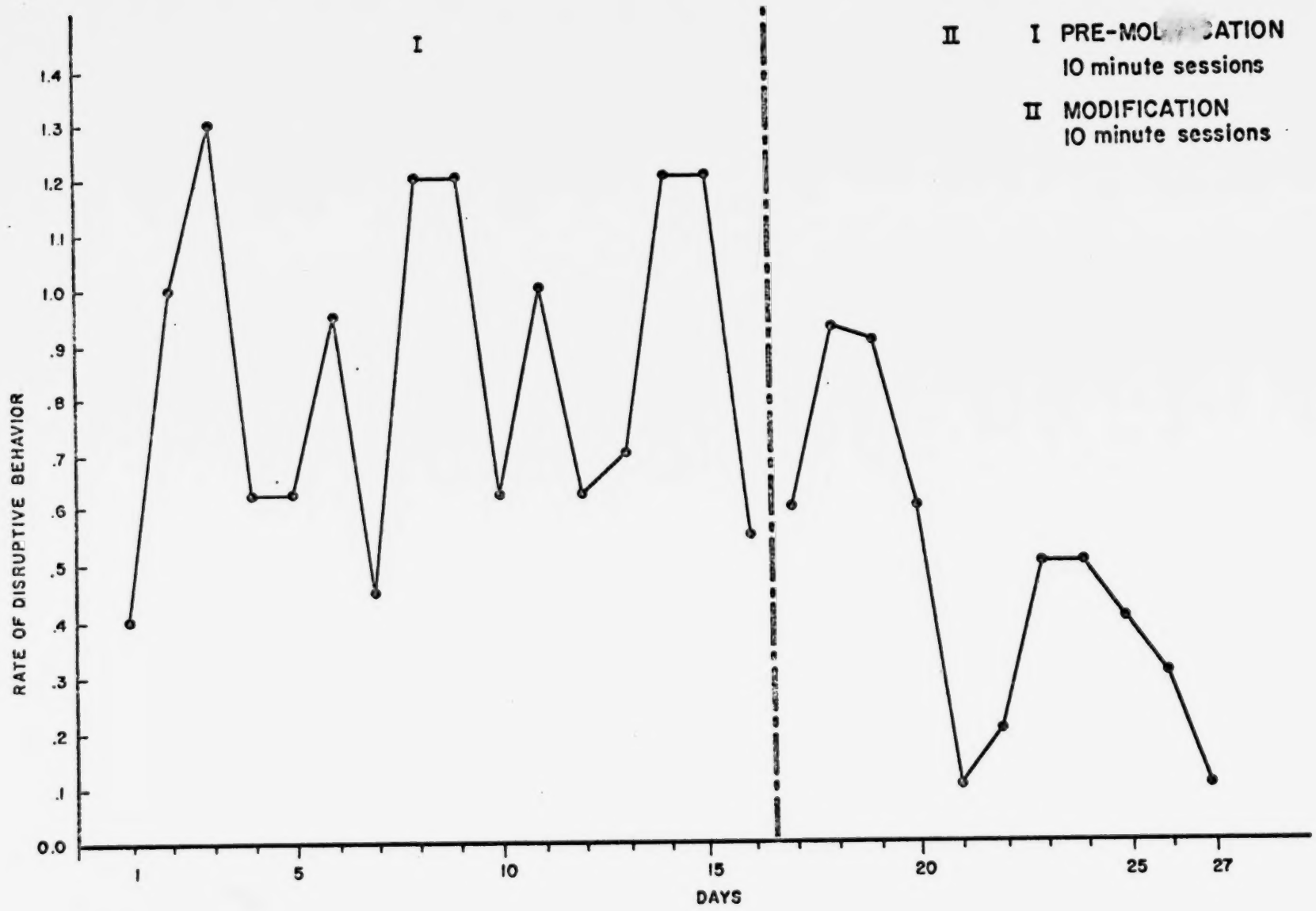
During the 16 day pre-modification phase (I) the guidance counselor counted the frequency of disruptive behaviors during ten minute periods. The mean rate of disruptive behavior during this phase was approximately .8. Beginning with day 17, the guidance counselor had the boy go to her office for a ten minute counseling session each morning before entering his regular classroom. During the next 11 days (II) the boy's mean rate of disruptive behavior as recorded by the guidance counselor dropped to approximately .5 and his behavior was reported as improved by his classroom teacher.

Graph C-2. This graph presents the results of the modification of disruptive behavior in a nine year old boy. Behaviors considered disruptive to the class were: (1) idle conversation, (2) being

GRAPH C-1

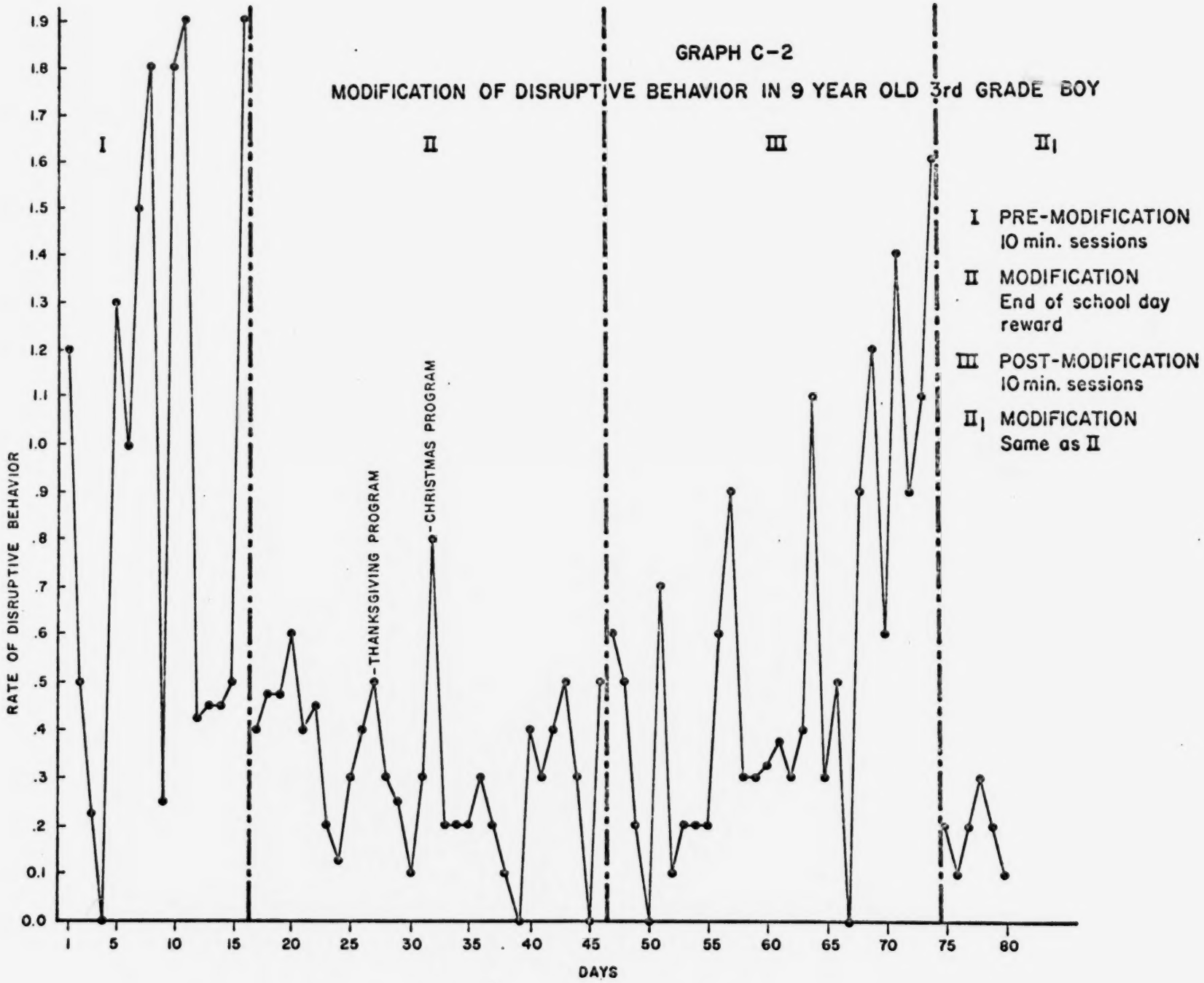
ADJUSTMENT TO 1st GRADE

Modification of Disruptive Behavior of 6 Year Old Male



GRAPH C-2

MODIFICATION OF DISRUPTIVE BEHAVIOR IN 9 YEAR OLD 3rd GRADE BOY



away from his desk without permission, (3) playing with items in his desk while supposed to be engaged otherwise, and (4) inattentive or daydreaming behavior. The guidance counselor and teacher both counted the number of disruptive behaviors during daily ten minute sessions. The observed mean rate of disruptive behavior during the 16 day pre-modification (I) phase was approximately .9.

The first modification (II) consisted of allowing the boy to go to the counselor's office ten minutes before the end of the school day. He received a piece of candy on those days that the boy and his teacher could agree that the level of disruptive behavior was not excessive. The mean rate of disruptive behavior during this phase was approximately .3.

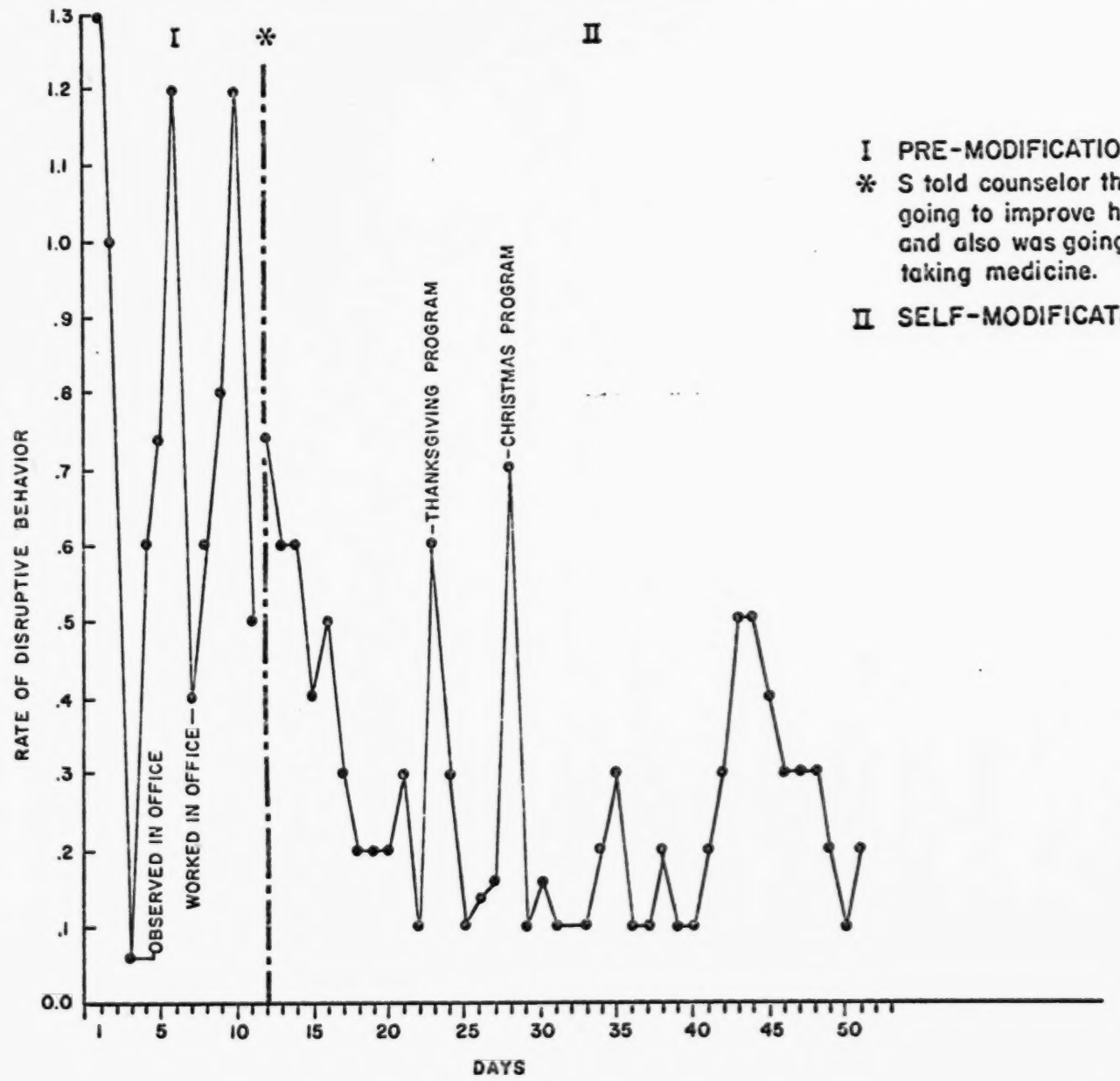
During the post-modification phase (III) the guidance counselor and teacher continued the same procedure as in the modification phase (II) except that no candy reward was available or mentioned. The mean rate of disruptive behavior for the post-modification phase (III) was approximately .5 with a range of from zero to 1.6.

Beginning on day 75 modification (II_1) was instituted. All procedures remained the same as in phase (III) except that candy was again available in the counselor's office. The mean rate of disruptive behavior dropped to approximately .2.

Graph C-3. This graph indicates the results of a self modification of disruptive behavior in a six year old first grade girl.

GRAPH C-3

SELF-MODIFICATION OF DISRUPTIVE BEHAVIOR BY 6 YEAR OLD 1st GRADE GIRL



I PRE-MODIFICATION

* S told counselor that she was going to improve her behavior and also was going to stop taking medicine.

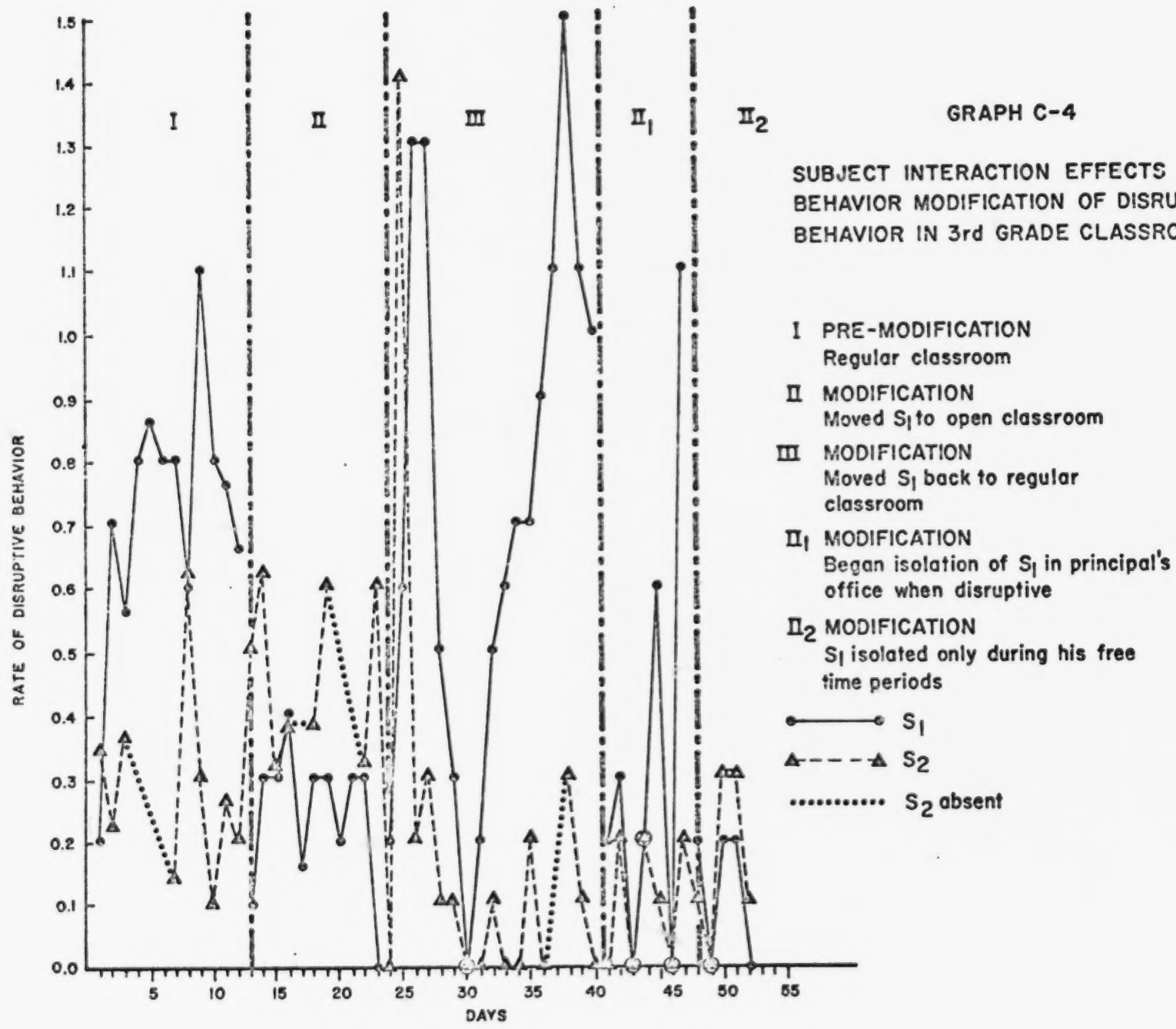
II SELF-MODIFICATION

Disruptive behaviors counted during the daily ten minute observation periods by the guidance counselor included (1) being out of seat without permission, (2) idle conversation, humming and singing, (3) daydreaming, and (4) out of seat wandering about the room. The behaviors were thought to be the result of a serious sexual assault perpetrated upon the girl just before she entered the first grade. She was under the care of the family medical doctor, from whom she received an unspecified tranquilizing medication.

During the 11 day pre-modification period (I), the mean rate of disruptive behavior was approximately .75. On days 2 and 6 of the pre-modification phase the girl's behavior had been so severe that on days 3 and 7 the guidance counselor had her stay in the guidance office all day.

The modification phase (II) consisted of the girl asking the guidance counselor why she was being observed. She was told the behaviors specified were disrupting the other members of the class. At that point, day 12, she told the guidance counselor that she was going to improve her behavior and also was going to stop taking medicine. The mean rate of disruptive behavior during the self modification phase (II) was approximately .28.

Graph C-4. This graph presents the results of a modification of disruptive behavior of a third grade student. Also noted were the interaction effects between the student whose behavior was being



GRAPH C-4

SUBJECT INTERACTION EFFECTS DURING BEHAVIOR MODIFICATION OF DISRUPTIVE BEHAVIOR IN 3rd GRADE CLASSROOM

I PRE-MODIFICATION
Regular classroom

II MODIFICATION
Moved S_1 to open classroom

III MODIFICATION
Moved S_1 back to regular classroom

II_1 MODIFICATION
Began isolation of S_1 in principal's office when disruptive

II_2 MODIFICATION
S_1 isolated only during his free time periods

——— S_1

- - - - S_2

..... S_2 absent

modified and a classmate whose behavior was recorded concurrently. Behaviors considered disruptive by the teacher were: (1) defiance, (2) idle conversation, (3) playing with items in his desk, (4) shouting out, and (5) being away from his desk without permission. Some of the behavior of $\underline{S}_2$ seems, in part, to be determined by the rate of disruptive behavior emitted by $\underline{S}_1$ in phases I, II, and III.

The guidance counselor counted the number of disruptive behaviors daily during the 12 day pre-modification phase (I). The observed mean rate of disruptive behavior during phase (I) was approximately .7 for $\underline{S}_1$ and approximately .3 for $\underline{S}_2$. $\underline{S}_1$ was present three days more than $\underline{S}_2$ during this time period.

The first modification phase (II) consisted of transferring $\underline{S}_1$ to an open classroom setting while $\underline{S}_2$ remained in the regular classroom setting. This arrangement was continued for eleven school days. The mean rate of disruptive behavior for $\underline{S}_1$ during this period was approximately .2 and for $\underline{S}_2$ was .4. $\underline{S}_2$ was not present during two days of this phase. Despite reduced disruptive behavior of $\underline{S}_1$ in the open classroom, his lack of academic progress necessitated his transfer into his previous classroom setting with $\underline{S}_2$.

Phase (III) represents a post-modification period in his regular classroom setting. The mean rate of disruptive behavior for $\underline{S}_1$ during the 17 days of phase (III) was approximately .7 and for $\underline{S}_2$, who was not present one day, it was approximately .2.

The second modification phase (II_1) consisted of isolating $\underline{S}_1$

in the principal's office whenever his teacher judged him to be disruptive. The mean rate of disruptive behavior during modification phase (II_1) for $\underline{S}_1$ was approximately .3 and for $\underline{S}_2$, .1.

The third modification phase (II_2) consisted of isolating $\underline{S}_1$ in the principal's office when his teacher judged him to be disruptive, but the actual isolation period was delayed until $\underline{S}_1$ had a free time period (lunch time, recess, study or rest periods). The mean rate of disruptive behavior for $\underline{S}_1$ during phase II_2 was .1 and for $\underline{S}_2$ was .2.

PROJECT DATA SUMMARY

1. Out of a total number of 111 teachers, 24% gathered some data for the project.
2. The total number of students involved in the project was 367. Included in this total were 191 students from School I, 74 students from School II, 90 students from School III, 9 students from the guidance group, and 12 children from the Parents' Group.
3. The total number of behaviors observed and counted was 77. Twelve graphs were initiated at School I, 31 at School II, 10 at School III, 10 by the guidance group, and 15 by the Parents' Group.
4. The total number of attempted modifications of individual behavior was 50. The total number of group modificatiors was 20.
5. Although all data should consist of at least three basic phases, i.e., pre-modification, modification, and post-modification, the following indicates the actual number of sequential completed phases. The total number of pre-modification phases not followed by a modification was 37. The total number of behaviors graphed through modification was 26. Nineteen modifications were completed through the entire sequence of phases.

QUESTIONNAIRE RESULTS

1. Although the investigators had hoped to administer the questionnaire to all faculty members at the schools involved, only 27% filled out the questionnaire at School I, 54% at School II, and 45% at School III.
2. In the appendix of this report is a copy of the non-standardized questionnaire that was administered. The questionnaire consisted of nine questions and a request for remarks about the project at the end. Following the questionnaire in the appendix is Table 1A which indicates the manner in which the teachers answered the nine questions. Table 2A indicates the general remarks made by the teachers in answer to item ten on the questionnaire.

DISSEMINATION OF INFORMATION

The investigators spoke to the following groups concerning the project:

1. Teachers in the Adult Migrant Education Program at Marymount College in Boca Raton, Florida.
2. Summer Tutors of the Neighborhood Youth Corps in Broward County, Florida.
3. Staff of the Children's Unit, South Florida State Hospital in Hollywood, Florida.
4. Junior League Workshop in Fort Lauderdale, Florida.
5. Parent-Teacher Association of the School of the Annunciation, Hollywood, Florida.
6. Faculty of the Department of Psychology and Education at Miami-Dade Junior College, South Campus, Miami, Florida.
7. County Mental Health Forum, Fort Lauderdale, Florida.

Other activities included:

1. Consulted with Nova University, Fort Lauderdale, Florida, on a contingency management project.
2. Taped two videotapes on operant techniques to be used for student training, Department of Psychology, Florida Atlantic University, Boca Raton, Florida.
3. Consulted with the Exceptional Child Division, Broward County School System, Fort Lauderdale, Florida, on a contingency management project.
4. Presented a one hour project report at the Southeastern Psychological Association Meeting in New Orleans, Louisiana.

CONCLUSIONS AND DISCUSSION

The project indicates that behavior modification techniques work in the public school setting. They can be applied not only to traditionally exceptional child populations but also to normal and culturally deprived populations. Some evidence was presented with regard to both short as well as longer range applications of the techniques.

Some general difficulties which the investigators encountered were

1. the problem of getting teachers to gather objective data. One of the major reasons for this problem is that the teacher training curriculum while in college, as well as continuing education, does not include these kinds of techniques which were developed from learning theory. Secondly, asking teachers to volunteer for this or any other inservice training program carries with it the negative connotation of an additional burden of work being placed on the shoulders of the already busy teacher. The investigators observed that the teachers fell into the categories of talker or doer. The members of the former group complained that they did not have time to learn the new techniques but continued to spend excessive amounts of time on ineffective behavioral controls such as shouting, demanding or referring to authority. The

latter group of teachers who learned and used the techniques successfully somehow managed to find the necessary time.

2. the problem of getting a teacher to conduct a modification through the post-modification phase. It is understandable that if a modification is successful the teacher does not want to remove the reward contingency. However, in order to find out if the necessary variable to bring about a behavioral change was the reward, it can not be ascertained without the post-modification phase.
3. the problem of either the school philosophy or the school facilities, or the student population changing. Some of the schools in Broward County are moving from regular classroom schools to the open school concept. The students are regrouped in some schools as policy changes. These changes are not problems, as they might be considered progress in many instances. However, it can be seen how these changes would, and in fact did, affect the project by altering the basic structure of the classroom where some modifications had begun.
4. the problem of being able to control consequences in the school. Although it is difficult or in some cases impossible to control the consequences of a behavior, the school situation is perhaps more difficult for the following reasons:

a. Many pupils are in the same classroom, and for the most rapid learning to take place the reward should be immediately administered, rather than after a long delay, otherwise some inappropriate behavior may be reinforced inadvertently.

b. A child may have several teachers who may not be rewarding the same behavior.

c. The parents may be uncooperative with the school.

5. It is sometimes a slow process for teachers to learn the relative effectiveness of different kinds of reinforcers. Like the technique in general, this depends upon keen observation of the student's behavior by the teacher. Few teachers seem to be adequate in this area without direction and training.

6. need for continued consultation by teachers conducting behavior modifications. The investigators conclude that in order to insure the successful introduction and continued use of the demonstrated usefulness of behavior modification techniques, qualified consultant personnel must be available.

In Broward County where the project was conducted most schools, 1 - 12, have guidance counselors who could be trained to perform the consultative function. Elementary guidance counselors in particular seem to be a logical choice for such a training program. Consultants must be knowledge-

able of the historical and experimental roots underlying the techniques. They must also remain in training as long as they consult, so that they might carry to the teachers of their respective schools the most advanced information and techniques. Principals, reading teachers, and other special teachers might also be able to utilize the training as behavior modification consultants.

One very positive result from the project was that teachers would state that a behavior was occurring at a high frequency, only to find out after graphing their data that in fact the behavior was not as disruptive as was thought. Secondly, it was of interest to find that nearly all behaviors chosen to be modified were disruptive behaviors. In other words, most teachers were concerned with the elimination of inappropriate behaviors rather than the "shaping up" of appropriate behaviors.

In summary, the project report indicates that behavior modification techniques can be applied by teachers, parents, and guidance personnel to bring forth significant changes in the behavior of children from all walks of life. There is a continuing need for more and better techniques, further application of the techniques to more situations and to different behaviors, and, lastly, the search for the appropriate reinforcers for learning continues!

APPENDIX

Table 1A

The number of teachers and the percentage of teachers making each choice on the questionnaire

Question & Number of Response	Choice A	Choice B	Choice C	Choice D	Choice E
1. 37	3%	5%	22%	43%	27%
2. 32	19%	12%	34%	16%	19%
3. 37	11%	11%	30%	16%	32%
4. 20	30%	25%	15%	10%	20%
5. 28	0%	28%	4%	14%	54%
6. 35	0%	6%	31%	43%	20%
7. 37	0%	5%	5%	14%	76%
8. 40	2%	5%	20%	28%	45%
9. 40	8%	10%	15%	22%	45%

Table 2A

Remarks made by teachers to item ten on the questionnaire.

Positive Remarks	Negative Remarks
1. good data collection techniques	1. high rate of absence interfered
2. well designed	2. difficulty finding appropriate reward
3. rewards worked	3. too time consuming
4. reward worked for total group	4. changes in class population
5. effective techniques	5. no follow-up at home
6. made teacher more aware of problems	6. failure due to retardation
7. worthwhile and interesting	7. overcrowded classes
8. graph enabled teacher to see change in behavior	8. lack of funds for rewards
9. valuable concept	9. needed more time for discussion with consultants
	10. lack of cooperation between teachers working with same class
	11. could not remember to count the behavior each day

INTERVIEW EVALUATION FOR THE BEHAVIOR MODIFICATION PROJECT

1. How valuable did you find the techniques suggested through the behavior modification project?

   not at all _ seldom _ sometimes _ often _ always _

2. How much data did you collect?

   none _ 2 weeks or less _ through baseline _

   through modification _ through post-modification _

3. Whether you did or did not collect data, which of the following statements most closely describes your feelings?

   had no problems in classroom _ had no time to see consultants _

   had no time to count behavior in classroom _ changes in class

   population _ had no major problems _

4. If you attempted a modification which in your opinion did not work which of the following statements best describes the reason?

   did not have time to keep count of behavior in class _

   was unable to give the reward consistently _ did not have rewards

   available in the classroom _ modification not continued long enough _

   reward did not bring about desired change in behavior _

5. If you attempted a modification which in your opinion did work, which of the following statements best describes the reason?

   just lucky _ desired change in behavior occurred as result of

   change in self-concept _ desired change in behavior occurred but

   not as result of reward _ desired change in behavior occurred as

   result of change in teacher's attitude _ desired change in behavior

   occurred as result of reward _

6. Will you continue to use techniques that you have learned in the behavior modification project in your classroom?

   never _ seldom _ sometimes _ often _ always _

7. To whom do you feel behavior modification techniques are applicable?

   no one _ severely retarded _ retarded and average _

   retarded, average and gifted _ everyone _

8. If another behavior modification program were instituted into your school next year would you participate?

   no _ probably not _ maybe _ probably yes _ yes _

9. If given the opportunity would you take a college credit course in behavior modification?

   no _ probably not _ maybe _ probably yes _ yes _

10. Write any remarks you have, positive or negative, about the behavior modification project.

WEEKLY DATA COLLECTION SHEET

STUDENT: _____ DATE: _____ TEACHER: _____

Disruptive Behavior	Mon.	Tues.	Wed.	Thurs.	Fri.	Totals
Shouting out						
Stomping feet						
Hitting, pushing						
Defiance, "NO"						
Whistling						
Idle conversation						
Playing with "things"						
Out of seat, "wandering"						
Other: (LIST)						

DATA COLLECTOR: _____

DATA SHEET

Teacher _____ Subject _____

Subject's Age _____ Sex _____ Grade _____

Behavior to be modified _____

_____

To be increased _____ To be decreased _____

Reward _____ Punishment _____

Dependent upon _____

_____

Schedule _____

Session	Number of Times	Time	Rate	Date	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					